BLM LIBRARY
88045139

U.S. Department of the Interior
Bureau of Land Management
Rock Springs District Office

Green River Resource Area March 1996

Green River Resource Area Resource Management Plan and Final Environmental Impact Statement Volume 1 of 2

RECEIVED
U. S. DEPT
APR 0 2 1996
BUREAU



The Bureau of Land Management is responsible for the balanced management of the public lands and resources and their various values so that they are considered in a combination that will best serve the needs of the American people. Management is based upon the principles of multiple use and sustained yield; a combination of uses that take into account the long term needs of future generations for renewable and nonrenewable resources. These resources include recreation, range, timber, minerals, watershed, fish and wildlife, wilderness and natural, scenic, scientific and cultural values.

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

BLM/WY/PL-96/012+1610

ID88045139

HD
243
.W8
R63
1996
V.1

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Wyoming State Office
P.O. Box 1828
Cheyenne, Wyoming 82003-1828

Dear Reader:

Enclosed for your review is the final environmental impact statement (EIS) for the resource management plan (RMP) for the Green River Resource Area. This document presents the Proposed RMP for managing the BLM administered public lands and resources in the resource area. The Proposed RMP is a refinement of the preferred alternative presented in the Draft EIS published in November 1992.

All parts of the Proposed RMP may be protested by parties who participated in the planning process and who have an interest which is or may be adversely affected by the approval of the Resource Management Plan (43 CFR 1610.5-2). Protests should be sent to the Director (480), Bureau of Land Management, 1849 C Street, N.W., Room 314 LS, Washington, D.C., 20240. Protests must be postmarked within 30 days after the Environmental Protection Agency publishes the filing notice for this Final EIS in the *Federal Register*. The protests should include the following information:

The name, mailing address, telephone number, and interest of the person filing the protest.

A statement of the issue(s) being protested.

A statement of the part(s) of the plan being protested.

A copy of all documents addressing the issue(s) that were submitted during the planning process by the protesting party, or an indication of the date the issue or issues were discussed for the record.

A concise statement explaining why the proposed management plan is believed to be wrong.

At the end of the 30-day protest period, the Proposed RMP, excluding any portion under protest, will become final. Approval will be withheld on any portion of the plan under protest until final action on the protest has been completed. Any significant change made as a result of a protest will be made available for public review and comment before it is approved.

I want to personally thank those who have participated in the planning process for this Resource Management Plan. I hope your involvement will continue as we move forward to implement and monitor the plan and manage the public lands and resources in the Green River Resource Area.

Sincerely,

Alan L Kesterke

Acting, State Director

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

FINAL
ENVIRONMENTAL IMPACT STATEMENT
and
PROPOSED RESOURCE MANAGEMENT PLAN

for the

Green River Resource Area
Rock Springs, Wyoming

Prepared by:

United States Department of the Interior
Bureau of Land Management
Green River Resource Area
Rock Springs District
Rock Springs, Wyoming

March 1996

Alan L. Kesterke — 2/15/96

Acting, Wyoming State Director — **Date**

TABLE OF CONTENTS

SUMMARY **1**
INTRODUCTION 1
PUBLIC INVOLVEMENT SINCE NOVEMBER 1992 1
DEVELOPMENT OF THE PROPOSED RMP 1

CHAPTER 1 – PURPOSE OF AND NEED FOR THE PLANNING EFFORT **5**
INTRODUCTION 5
DESCRIPTION OF THE PLANNING AREA 5
PLANNING ISSUES 5
Issue 1: Minerals Resource Management and Rights-of-Way 5
Issue 2: Land Tenure Adjustment and Resource Accessibility 5
Issue 3: Resource Uses Affecting Vegetation, Soils, Air, and Watershed Values 5
Issue 4: Recreation and Cultural Resource Management 6
Issue 5: Special Management Areas 6
PLANNING CRITERIA 6
General Planning Criteria 6
Planning Criteria for Specific Situations 6
Criteria for Use of Standard Mitigation Guidelines 6
Criteria for the Coal Screening/Planning Process 7
Criteria for Hydrocarbon Potential 7
Criteria for Locatable Minerals Potential 7
Criteria for Withdrawals and Classifications 7
Criteria for Wilderness 8
Criteria for Areas of Critical Environmental Concern (ACECs) 8
Criteria for Wild Horses 8
Criteria for Wild and Scenic Rivers 8

CHAPTER 2 – DESCRIPTIONS OF THE ALTERNATIVES, INCLUDING THE PROPOSED RESOURCE MANAGEMENT PLAN **17**
ALTERNATIVE FORMULATION 17
ALTERNATIVES AND MANAGEMENT OPTIONS CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS 17
Elimination of Livestock Grazing 17
Elimination of Timber Harvesting 17
Elimination of Mineral Leasing (Except Coal) 17
Surface Disturbance On or Around Special Status Plant Species 18
Maximum, Unconstrained Alternatives 18
Restrictions Less Stringent Than No Surface Occupancy (NSO) 18
ALTERNATIVES ANALYZED IN DETAIL 18
Introduction/Overview 18
PROPOSED PLAN 18
Air Quality Management 18
Cultural, Natural History, and Paleontological Resource Management 19
Historic Trails 19
Congressionally Designated Historic Trails and Associated Historic Sites 19
Other Historic Trails And Historic Sites 19
Rock Art Sites 20
Other Sites 20
Other Cultural and Paleontological Management Actions 20
Fire Management 21
Forests and Woodlands Management 21
Hazardous Materials and Other Hazards 22
Lands and Realty Management 23
Land Ownership Adjustment 23
Utility/Transportation Systems 23

CONTENTS

Withdrawals/Classifications 23
Desert Land Entries 23
Access 24
Livestock Grazing Management 24
Minerals Management 25
Leasable Minerals 25
Fluids 25
Geothermal 25
Solid Leasables (Coal) 26
Solid Leasables (Sodium/Trona) 27
Other Leasables 27
Mineral Materials 27
Locatable Minerals 27
Geophysical 28
Off-Road Vehicle Management 28
Recreation Resource Management 28
Wind River Front Special Recreation Management Area (261,080 acres of BLM-administered public lands) 29
Eastern Portion 29
Western Portion 30
Special Status Species Management 30
Candidate, Sensitive, and Threatened and Endangered Plant Species Management 30
Vegetation Management 31
Proper Functioning Condition Guidelines 31
Visual Resource Management 32
Watershed/Soils Management 32
Wild Horse Management 33
Wilderness Resource Management 34
Wildlife Management 34
Special Designation Management Areas Introduction 35
Cedar Canyon ACEC (2,550 acres of BLM-administered public lands) 35
Greater Red Creek Proposed ACEC (131,890 acres of BLM-administered public lands) 36
Actions that Apply to the Entire Area 36
Actions Unique to the Sage Creek Watershed 37
Actions Unique to the Currant Creek Watershed 37
Actions Unique to the Red Creek Watershed 37
Greater Sand Dunes ACEC (38,650 acres of BLM-administered public lands) 38
General Area 38
Additional or Different Items Specific to the Western Portion 38
Additional or Different Items Specific to the Eastern Portion 39
Crookston Ranch and Boars Tusk 39
Natural Corrals ACEC (1,276 acres of BLM-administered public lands) 39
Oregon Buttes ACEC (3,450 acres of BLM-administered public lands) 40
Pine Springs ACEC (90 acres of BLM-administered public lands) and Proposed Expansion Area (5,940 acres of BLM-administered public lands) 40
South Pass Historic Landscape Proposed ACEC (53,780 acres of BLM-administered public lands) 41
Special Status (Candidate) Plant Species Proposed ACEC (900 acres of BLM-administered public lands) 41
Steamboat Mountain Proposed ACEC (43,270 acres of BLM-administered public lands) 42
White Mountain Petroglyphs ACEC (20 acres of BLM-administered public lands) 43
Other Management Areas 44
Monument Valley Management Area (69,940 acres of BLM-administered public lands) 44
Pine Mountain Management Area (64,200 acres of BLM-administered public lands) 44
Management Actions Unique to the Four J Basin Portion 45

CONTENTS

Red Desert Watershed Management Area (341,060 acres of BLM-administered public lands) 45
Sugarloaf Basin Management Area (85,880 acres of BLM-administered public lands) 46
Wild and Scenic Rivers Management on BLM-Administered Public Lands 47

CHAPTER 3 – AFFECTED ENVIRONMENT 313
CLIMATE AND AIR QUALITY 313
Climate 313
Air Quality 313
CULTURAL RESOURCES 314
Prehistory 314
PaleoIndian Period 314
Pre-Clovis 314
Clovis 315
Goshen 315
Folsom 315
Late PaleoIndian Traditions 315
Archaic Period 315
Early Archaic 315
Middle Archaic 315
Late Archaic 316
Late Prehistoric Period 316
Historic Period 316
Paleontology 317
Cretaceous Period 317
Paleocene Epoch 317
Eocene Epoch 317
Oligocene and Miocene Epochs 318
FIRE 318
FORESTS AND WOODLANDS 318
General Commercial Forest Type Condition 318
Historical and Current Use 319
Present Practices 319
Social and Economic Considerations 320
Present Demands 320
LANDS 320
Withdrawals 321
Access/Transportation 321
LIVESTOCK GRAZING 321
MINERALS AND GEOLOGY 322
Historical Geology 322
General Geology 324
Oil and Gas Geology 325
Historical Background 325
Origin of Oil and Gas 325
Trapping Mechanisms 326
Oil and Gas Occurrences 326
Production History 326
Pipelines and Natural Gas Storage 327
Oil and Gas Development Potential 327
Coal 327
Activity 327
Coal Development Potential 328
Preference Right Lease Applications 328
Sodium/Trona 328
Activity 328
Sodium Development Potential 328

CONTENTS

Oil Shale 329
Resource Potential 329
Locatable Minerals 329
Resource Potential 329
Salable Minerals 329
Resource Potential 329
Geologic Hazards 330
OFF-ROAD VEHICLES 330
RECREATION 330
Recreation Opportunity Spectrum 331
SOCIOECONOMICS 332
Introduction 332
Taxable Property Valuation 332
Total Gross Valuation 332
Assessed Valuation 332
Other Taxable Property 332
Taxes 333
Ad Valorem Taxes 333
Severance Tax Payments 333
Sales Tax Collections 333
Use Taxes 333
In Lieu Tax Payments 333
Population 333
Employment 334
General Overview 334
By Standard Industrial Classification 334
Annual Average Weekly Wages of Covered Employment 334
Income 334
Total Personal 334
Per Capita 334
Earned Income - Major Component of Total Personal Income 334
Agricultural Sector 335
General Characteristics 335
Livestock Grazing on BLM-Administered Lands 335
Minerals 335
Oil and Gas 336
Coal 336
Employment 336
Cumulative Coal Output and Value 336
Sodium/Trona 336
Recreation 336
SOILS 337
Desert Land Entry Restrictions 337
SPECIAL STATUS PLANT SPECIES 337
Candidate Plant Species 337
Meadow Pussytoes (Antennaria arcuata) 338
Small Rockcress (Arabis pusilla) 338
William's Rockcress (Arabis williamsii) 338
Mystery Wormwood (Artemisia biennis var. diffusa) 338
Precocious Milkvetch (Astragalus proimanthus) 339
Ownbey's Thistle (Cirsium ownbeyi) 339
Wyoming Tansy Mustard (Descurainia torulosa) 339
Large-Fruited Bladderpod (Lesquerella macrocarpa) 339
Contracted Indian Ricegrass (Oryzopsis contracta) 340
Swallen's Mountain Ricegrass (Oryzopsis swallenii) 340

CONTENTS

Stemless Beardtongue (Penstemon acaulis) 340
Tufted Twinpod (Physaria condensata) 340
Green River Greenthread (Thelesperma caespitosum) 340
Uinta Greenthread (Thelesperma pubescens) 341
Cedar Rim Easter Daisy (Townsendia microcephala) 341
VEGETATION 341
Low Density Sagebrush Class 341
High Density Sagebrush Class 341
Saltbush Class 342
Greasewood Class 342
Aspen Class 342
Riparian Class 342
Conifer Class 343
Juniper Class 343
Barren Class 343
Sand Dune Class 344
Agriculture Class 344
Poisonous and Noxious Plants 344
VISUAL RESOURCES 344
WATERSHED 344
Monitoring 345
Groundwater 345
Water Depletions 345
Roads and Surface Disturbance 345
Riparian 345
WILD HORSES 345
WILDERNESS 347
WILDLIFE 347
Terrestrial Wildlife 347
Deer 347
Pronghorn Antelope 347
Rocky Mountain Elk 348
Moose 349
Bighorn Sheep 349
Mountain Lion 349
Black Bear 349
Coyote 349
Birds 349
Waterfowl 349
Sage Grouse 350
Raptors 350
Aquatic Wildlife and Habitat 351
Fisheries 351
Fisheries Habitat Requirements 351
Stream Habitat 352
Riparian Habitat 352
Threatened, Endangered, and Candidate Species 352
SPECIAL MANAGEMENT AREAS 353
Cedar Canyon ACEC 353
Greater Red Creek Area 353
Big Game 355
Raptors 355
Small Game and Nongame 355
Greater Sand Dunes ACEC 355
Mammals 356

Avifauna 356
Amphibians 356
Monument Valley Area 356
Natural Corrals ACEC 357
Oregon Buttes ACEC 357
Pine Springs ACEC 357
Pine Springs Expansion Area 358
Red Desert Watershed Area 358
Cultural Resources 358
Livestock Grazing 358
Minerals 358
Oil and Gas 358
Coal 359
Coalbed Methane 359
Mineral Materials 359
Locatable Minerals 359
Seismic Activities 359
Geology and Geologic Hazards 359
Off-Road Vehicles 359
Recreation 359
Rights-of-Way/Withdrawals 359
Soils 359
Vegetation 359
Visual Resources Management 360
Watershed 360
Wild Horses 360
Wildlife Habitat 360
South Pass 361
Special Status Plant Species 361
Steamboat Mountain Area 361
Cultural Resource Concerns 362
Livestock 362
Minerals 362
Native American Concerns 362
Recreation 362
Visual 362
Wildlife 362
White Mountain Petroglyphs ACEC 362
Wild and Scenic Rivers 362
Wind River Front 363

CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES 417
INTRODUCTION 417
EXPANDED IMPACT ANALYSIS AREA 417
PROPOSED PLAN 417
Impact Analysis 417
Air Quality 417
Cultural, Natural History, and Paleontological 418
Fire 419
Forests and Woodlands 420
Hazardous Materials 421
Lands and Realty 421
Livestock Grazing 422
Minerals 423
Off-Road Vehicles 426

CONTENTS

Recreation 427
Socioeconomics 429
Special Status Plant Species 431
Vegetation 432
Visual Resources 434
Watershed/Soils 435
Wild Horses 436
Wildlife 438
Antelope 440
Elk 440
Mule Deer 441
Special Management Areas 441
Other Management Areas 444

CHAPTER 5 – CONSULTATION AND COORDINATION 465
INTRODUCTION 465
PUBLIC PARTICIPATION SUMMARY 465
CONSISTENCY 465
CONSULTATION AND COORDINATION 466
Native American Consultation 466
Others 467
COMMENT SUMMARY 467
GLOSSARY 479
ABBREVIATIONS 489
BIBLIOGRAPHY 491

TABLES

TABLE 1-1 – LAND AND MINERAL OWNERSHIPS AND ADMINISTRATIVE JURISDICTIONS WITHIN THE GREEN RIVER RMP PLANNING AREA 9
TABLE 2-1 – SUMMARY COMPARISON OF ALTERNATIVES 50
TABLE 2-2 – SUMMARY COMPARISON OF IMPACTS 156
TABLE 2-3 – ESTIMATED ANNUAL ALLOWABLE CUT PER TIMBER UNIT 213
TABLE 2-4 – RIGHTS-OF-WAY AVOIDANCE AND EXCLUSION AREAS BY ALTERNATIVE 214
TABLE 2-5 – PROPOSED WITHDRAWALS BY ALTERNATIVE 218
TABLE 2-6 – WITHDRAWALS TO BE REVOKED OR RETAINED 219
TABLE 2-7 – ACCESS NEEDS 220
TABLE 2-8 – AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL 221
TABLE 2-9 – SEASONAL RESTRICTIONS FOR ALL SURFACE DISTURBANCE ACTIVITIES 223
TABLE 2-10 – AREAS CLOSED TO COAL EXPLORATION AND SODIUM PROSPECTING 224
TABLE 2-11 – SUMMARY DESCRIPTION OF COAL SCREENING PROCESS RESULTS AND COAL MANAGEMENT ACTIONS 227
TABLE 2-12 – AREAS CLOSED TO MINERAL MATERIAL SALES 227
TABLE 2-13 – AREAS PROPOSED FOR CLOSURE TO GEOPHYSICAL VEHICLES & EXPLOSIVE CHARGES 229
TABLE 2-14 – ORV DESIGNATIONS 230
TABLE 2-15 – PROPOSED VRM CLASSES BY ALTERNATIVE 233
TABLE 2-16 – WILD HORSE POPULATIONS AND APPROPRIATE MANAGEMENT LEVELS 233
TABLE 2-17 – ALLOTMENTS FOR THE PROPOSED LITTLE COLORADO AREA 234
TABLE 2-18 – ESTIMATED POPULATION INCREASE BASED ON 3-YEAR GATHERING CYCLE 235
TABLE 2-19 – BLM-ADMINISTERED SURFACE ACRES PROPOSED FOR SPECIAL MANAGEMENT DESIGNATIONS 236
TABLE 2-20 – AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL 237
TABLE 2-21 – AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL 239
TABLE 2-22 – AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL 240
TABLE 2-23 – SUMMARY DESCRIPTION OF COAL SCREENING PROCESS RESULTS AND COAL MANAGEMENT ACTIONS 243
TABLE 2-24 – SUMMARY DESCRIPTION OF COAL SCREENING PROCESS RESULTS AND COAL MANAGEMENT ACTIONS 244
TABLE 2-25 – SUMMARY DESCRIPTION OF COAL SCREENING PROCESS RESULTS AND COAL MANAGEMENT ACTIONS 244

CONTENTS

TABLE 2-26 – ORV DESIGNATIONS 245
TABLE 2-27 – ORV DESIGNATIONS 247
TABLE 2-28 – ORV DESIGNATIONS 249
TABLE 2-29 – WILD HORSE POPULATIONS AND APPROPRIATE MANAGEMENT LEVELS 251
TABLE 2-30 – ESTIMATED POPULATION INCREASE BASED ON 3-YEAR GATHERING CYCLE 252
TABLE 2-31 – LIVESTOCK FORAGE/AUM LOSSES 253
TABLE 2-32 – LIVESTOCK FORAGE/AUM LOSSES 254
TABLE 2-33 – LIVESTOCK FORAGE/AUM LOSSES 255
TABLE 2-34 – LIVESTOCK FORAGE/AUM LOSSES 256
TABLE 3-1 – CRITERIA AIR POLLUTANT STANDARDS AND BACKGROUND CONCENTRATIONS FOR THE GREEN RIVER RESOURCE AREA, WYOMING 364
TABLE 3-2 – AIR POLLUTION INCREMENTS FOR PREVENTION OF SIGNIFICANT DETERIORATION 364
TABLE 3-3 – FIRE HISTORY (1980 - 1991) 365
TABLE 3-4 – COMMERCIAL FOREST ACRES BY TIMBER TYPE AND SIZE CLASS 365
TABLE 3-5 – COMMERCIAL VOLUME BY SPECIES AND SIZE CLASS 365
TABLE 3-6 – COMMERCIAL TIMBER ACRES IN THE VARIOUS TIMBER COMPARTMENTS THAT ARE AFFECTED BY OTHER RESOURCE EVENTS AND/OR VALUES 366
TABLE 3-7 – TIMBER PRODUCT SALES 366
TABLE 3-8 – NUMBER OF WELLS BY STATUS AND COUNTY 367
TABLE 3-9 – OIL AND GAS DEVELOPMENT POTENTIAL IN SPECIAL MANAGEMENT AREAS 367
TABLE 3-10 – OIL AND GAS WELLS DRILLED IN SPECIAL MANAGEMENT AREAS 368
TABLE 3-11 – OIL AND GAS NONDISCRETIONARY LEASE AREAS BY HYDROCARBON POTENTIAL 369
TABLE 3-12 – UNDEVELOPED RECREATION SITES IN THE GRRA 369
TABLE 3-13 – RECREATION USE DAYS 370
TABLE 3-14 – RECREATION OPPORTUNITY SPECTRUM CLASS DESCRIPTIONS 371
TABLE 3-15 – CANDIDATE PLANT ACREAGE - ACTUAL AND POTENTIAL HABITAT 374
TABLE 3-16 – CANDIDATE PLANT SPECIES IN THE GREEN RIVER RESOURCE AREA 375
TABLE 3-17 – LANDSAT CLASSIFICATION ACREAGE AND ASSOCIATED COMMUNITIES 376
TABLE 3-18 – HIGHEST LEVELS OF SALINITY IN THE GRRA 377
TABLE 3-19 – GROUNDWATER OCCURRENCE 377
TABLE 3-20 – UNDERGROUND WATER CLASS 378
TABLE 3-21 – WILD HORSE POPULATIONS 380
TABLE 3-22 – WILDERNESS STUDY AREAS 381
TABLE 3-23 – BIG GAME POPULATION STATUS 381
TABLE 3-24 – STREAMS WITHIN THE RESOURCE AREA HAVING SENSITIVE FISH 382
TABLE 3-25 – STREAM CHANNEL STABILITY RATING 382
TABLE 3-26 – RIPARIAN AREA CONDITION RATING 383
TABLE 3-27 – BLM-ADMINISTERED PUBLIC LANDS IN EXISTING ACECS 383
TABLE 3-28 – OWNERSHIP WITHIN GENERAL LOCATIONS OF BLM-ADMINISTERED SPECIAL OR OTHER MANAGEMENT AREAS (as identified in one or more alternatives) 385
TABLE 3-29 – ACTIVE RAPTOR NESTS IN THE CEDAR CANYON ACEC 387
TABLE 3-30 – BIG GAME CRUCIAL WINTER RANGE IN THE GREATER RED CREEK AREA 387
TABLE 3-31 – RAPTOR SPECIES NEST COUNT 387
TABLE 3-32 – POTENTIAL FOR DEVELOPMENT OF OIL AND GAS 388
TABLE 4-1 – ASSUMPTIONS FOR ANALYSIS 458
TABLE 4-2 – ACTIVITIES WHICH AFFECT AIR QUALITY AND TYPICAL EMISSION FACTORS FOR EACH 459
TABLE 4-3 – MAJOR AIR POLLUTION EMISSION SOURCES 460
TABLE 4-4 – SUMMARY OF IMPACTS TO WILDLIFE 461
TABLE 4-5 – IMPACTS TO BIG GAME BY HERD UNIT 462
TABLE 5-1 – GREEN RIVER RMP LIST OF PREPARERS 469
TABLE 5-2 – COMMENT LETTER INDEX 471
TABLE 5-3 – PUBLIC OUTREACH 476
TABLE 5-4 – KEY COORDINATION ACTIONS 477

MAPS

Map 1 – General Location 11
Map 2 – Other Agency Administered Land 12
Map 3 – Coal/Sodium Potential 13
Map 4 – Wilderness Study Areas 14
Map 5 – Select Cultural Resource Sites and Historic Trails 257
Map 6 – Timber Compartments 258
Map 7 – Land Tenure Adjustment Parcels-Proposed Plan 259
Map 8 – Rights-of-Way Exclusion Areas-Proposed Plan 260

CONTENTS

Map 9 – Rights-of-Way Avoidance Areas-Proposed Plan 261
Map 10 – Rights-of-Way Windows & Communication Sites-Proposed Plan 262
Map 11 – Existing Withdrawals 263
Map 12 – Public Water Reserves 264
Map 13 – Road Access Needs 265
Map 14 – No Lease Areas-Proposed Plan 266
Map 15 – No Surface Occupancy Areas, Proposed 267
Map 16 – Big Game Crucial Winter Ranges & Parturition Areas-Proposed Plan 268
Map 17 – Sage Grouse Seasonal Restriction Areas-Proposed, A, C 269
Map 18 – Raptor Seasonal Restriction Areas-All Alts 270
Map 19 – Lease with Controlled Surface Use Stips, Proposed 271
Map 20 – Off-Road Vehicle Designations-Proposed Plan 272
Map 21 – Recreation Opportunity Spectrum 273
Map 22 – Recreation Use Areas 274
Map 23 – Special Recreation Management Areas 275
Map 24 – Special Status Plant Species 276
Map 25 – Visual Resource Management-Proposed Plan 277
Map 26 – Areas of Hydrologic Concern 278
Map 27 – Waters and Floodplains 279
Map 28 – Existing, Interim, & Proposed Wild Horse Herd Management 280
Map 29 – Proposed South Pass Historic Landscape 281
Map 30 – Potentially Suitable W&S River-Sweetwater River 282
Map 31 – Land Tenure Adjustment Parcels-A 283
Map 32 – ROW Windows & Comm Sites-Alt. A 284
Map 33 – ROW Windows & Comm Sites-Alt. B 285
Map 34 – ROW Exclusion Areas-A 286
Map 35 – ROW Avoidance Areas-A 287
Map 36 – ROW Exclusion Areas-B 288
Map 37 – ROW Avoidance Areas-B 289
Map 38 – ROW Exclusion Areas-C 290
Map 39 – ROW Avoidance Areas-C 291
Map 40 – No Lease Areas, A 292
Map 41 – No Lease Areas, B 293
Map 42 – No Lease Areas, C 294
Map 43 – No Surface Occupancy Areas, Alt. A 295
Map 44 – No Surface Occupancy Areas, Alt. B 296
Map 45 – No Surface Occupancy Areas, Alt. C 297
Map 46 – Big Game Crucial Winter Ranges & Parturition Areas-Alt. A & C 298
Map 47 – Lease with Controlled Surface Use Stips, A 299
Map 48 – Lease with Controlled Surface Use Stips, B 300
Map 49 – Lease with Controlled Surface Use Stips, C 301
Map 50 – ORV Desigs.-A 302
Map 51 – ORV Desigs.-B 303
Map 52 – ORV Desigs.-C 304
Map 53 – Existing VRM 305
Map 54 – VRM, B 306
Map 55 – VRM, C 307
Map 56 – SMAs-Alt. A 308
Map 57 – SMAs-Alt. B 309
Map 58 – SMAs-Alt. C 310
Map 59 – Climatological Stations in Southwestern Wyoming 389
Map 60 – Elevation Contours 390
Map 61 – Annual TSP Non-Attainment Areas 391
Map 62 – Geologic Hazards 392
Map 63 – Fire Management 393
Map 64 – Transportation 394
Map 65 – Existing & Proposed Fences 395
Map 66 – Existing Coal & Sodium Mines, Lease Areas, and Permit Areas 396
Map 67 – Locatable Mineral Development Potential Areas 397
Map 68 – Sand and Gravel 398
Map 69 – Cities, Towns, Mine Sites, Counties, and Industrial Plants 399
Map 70 – Mule Deer Habitat 400
Map 71 – Antelope Habitat 401

CONTENTS

Map 72 – Elk Habitat 402
Map 73 – Moose Habitat 403
Map 74 – EXPANDED IMPACT ANALYSIS AREA 463
Map 75 – CLIMATOLOGICAL POLLUTION POTENTIAL 464
Map A – Proposed Plan Land Status, ACECs, and Other Management Areas ..... Pocket
Map B – Mineral Status ..... Pocket
Map C – Grazing Allotments and Land Status ..... Pocket
Map D – General Soils ..... Pocket
Map E – Vegetation ..... Pocket

FIGURES

Figure 1 – Planning Process 15
Figure 2 – Unplanned Ignitions Fire Decision Chart 311
Figure 3 – Temperature and Precipitation at Green River, Wyoming 404
Figure 4 – Annual Wind Rose for Rock Springs, Wyoming 405
Figure 5 – PM Monitoring Station 406
Figure 6 – Seasonal Visibility at the Chicken Springs Site, Wyoming 407
Figure 7 – Sulfate and Nitrate Deposition at Pinedale, Wyoming 408
Figure 8 – Projectile Points From Various Time Periods in Southwestern Wyoming 409
Figure 9 – Greater Green River Basin 410
Figure 10 – Generalized Stratigraphic Nomenclature Chart 411
Figure 11 – Generalized Stratigraphic Section for the Green River Basin 412
Figure 12 – Cross Section, Green River Basin and Adjacent Areas 413
Figure 13 – Well Completions by Status 414
Figure 14 – Well Completions by Producing Formation 415
Figure 15 – Well Completions by Depth 416

Volume 2

APPENDICES 1-14

MAPS

MAP 76 – Coal Development Potential Area 526
MAP 77 – Coal Screening Process-Unsuitable Areas 527
MAP 78 – Coal Screening Process-Alt. B 528
MAP 79 – Coal Screening Process-Alt. C 529
MAP 80 – Coal Screening Process-Acceptable for Subsurface Mining Only-Proposed Plan 530
MAP 81 – Coal Screening Process-Acceptable For Coal Mining with Appropriate Mitigation-Proposed Plan 531
MAP 82 – Coal Screening Process-Unsuitable and Unacceptable Areas-Proposed Plan 532
MAP 83 – Existing Oil and Gas Wells 599
MAP 84 – Abandoned Oil and Gas Wells 600
MAP 85 – Vector Map Influencing Wind, NW 704
MAP 86 – Vector Map Influencing Wind, SW 705
MAP 87 – Areas with Projected Coal Development 706
MAP 88 – Oil and Gas Development Potential 707
MAP 89 – Tertiary Coalbed Methane 708
MAP 90 – Upper Cretaceous Coalbed Methane 709
MAP 91 – Coalbed Methane Development Potential 710

FIGURES

FIGURE 16 – Cultural Resources Process 586
FIGURE 17 – Location Layout for a Well 9,000 to 15,00 feet deep 601
FIGURE 18 – Diagram of Rotary Rig 602

SUMMARY

INTRODUCTION

This final environmental impact statement (EIS) describes the Proposed Green River Resource Management Plan (RMP) and its environmental consequences. This proposed plan is for the future management of approximately 3,635,000 acres of BLM-administered public land surface and 3,581,000 acres of BLM-administered Federal mineral estate in the Green River Resource Area.

This Final EIS is not a complete reprinting of the material presented in the Draft EIS that was released in November 1992. Rather, the description of the Proposed Green River RMP and the analysis of its environmental consequences are presented in detail, while the comparative descriptions and analyses of the other alternative plans, that were presented in detail in the Draft EIS, are presented in summary fashion. Public comments on the Draft EIS are included, along with BLM's responses to those comments.

All maps related to the proposed plan are included in this document. Some are new, some are revisions of maps used in the Draft EIS, and some are reproduced, unchanged, from the Draft EIS. The small map scale was chosen to show a general sense of location. More detailed maps are on file in the Green River Resource Area Office. The information on these maps is dynamic and subject to change as new information and data are acquired.

PUBLIC INVOLVEMENT SINCE NOVEMBER 1992

The Draft EIS for the Green River RMP was released in November 1992. The public was invited to comment on the draft through a notice in the *Federal Register*, notices in local news media, and open houses throughout the planning area. A public meeting was held in February 1993, and small group meetings and open houses were held at various times and locations until March 1995.

A total of 321 written comments were received on the Draft EIS. These and the comments taken at meetings and open houses were used in making corrections and needed changes to the preferred alternative (in the Draft EIS) toward developing the Proposed Green River RMP. These comments and BLM's responses are included in Chapter 5 of this Final EIS document.

References to the *Green River Basin* and the *Green River Resource Area* as being the same area have created some confusion in understanding the difference between the geologic area of the Greater Green River Basin and the BLM administrative area called the Green River Resource Area. This has also led to confusion over how much oil and gas development would occur in the Resource Area. The Greater Green River Basin is the name given to a large geographic region encompassing portions of Colorado, Utah and Wyoming, that has a high potential for the development of oil and gas resources. The Green River Resource Area involves only about ½ of the Greater Green River Basin.

Although the Resource Area covers about one half of the Greater Green River Basin, less than one third of the total wells drilled, and less than one third of the total producing wells in the Wyoming portion of the are within the Resource Area. If we included the Greater Green River Basin wells drilled in both Colorado's Sand Wash Basin and in Utah's southern end of the Moxa Arch, then the Resource Area wells would represent an even smaller fraction of those in the Greater Green River Basin. This points out that the majority of oil and gas drilling activity within the Greater Green River Basin has occurred outside of the Green River Resource Area. Further explanation and clarification of this situation is found in the responses to comments.

DEVELOPMENT OF THE PROPOSED RMP

The proposed Green River RMP was developed by making corrections and refinements to the preferred alternative presented in the Draft EIS. The modifications to the preferred alternative were made in response to public comment, to incorporate new information, or to make factual corrections. The most notable changes are summarized below. A complete description of the proposed Green River RMP is in Chapter 2.

Chapter 1 of the EIS has been updated to include information on planning criteria for ACECs. This information was not included in the Draft EIS.

Chapter 2 of the Draft EIS has not been completely reprinted in this Final EIS. For a thorough narrative description of all alternatives considered, please refer to Chapter 2 of the Draft EIS. A summary of these alternatives is found in Table 2-1 of the Final EIS.

In the proposed RMP, the Wind River Front Special Recreation Management Area would be divided to more appropriately manage the diverse resources in the area. The western portion, including about 84,000 acres of BLM-administered public land, would be managed to allow for the on-going development of minerals while providing for recreation uses and other resource values. The eastern portion, including about 88,500 acres of public land, would be closed to leasing of federal minerals to ensure that other sensitive resource values and recreation uses would be adequately provided for. Much of the eastern portion is unleased for minerals at this time, has low development potential for oil and gas, and is not within a potential coal or trona area. The area has some potential for locatable and salable mineral activity. Other activities (such as livestock grazing and timber harvesting) would be appropriately conditioned to retain the recreation opportunities and other resource values.

Management recommendations for Candidate Plant Species sites (now found in the Special Status (Candidate) Plant Species section of this Final EIS) have been modified from "no mineral leasing" to allow for leasing of federal minerals with a "no surface occupancy" (NSO) requirement. These sites are very small and sparsely located and can be managed just as effectively with the NSO requirement. Also, closure of small dispersed areas to oil and gas leasing are generally not manageable from a drainage perspective. This is particularly so in cases where such areas are adjacent to privately owned lands and minerals, where the federally owned mineral could be recovered (drained) from private access and royalties from the federal minerals would be lost. Leasing with an NSO requirement would result in protection of the plant species, still allowing legitimate recovery of the federal mineral resource. The no surface occupancy requirement would apply to all surface disturbing activities. The other management prescriptions for these sites, described in the preferred alternative of the Draft EIS, would still apply.

Proper functioning condition guidelines for riparian habitat management have been included in the vegetation section of the proposed RMP to ensure that riparian management objectives are included.

The oil and gas leasing recommendations for the Steamboat Mountain area have been modified. Much of this area is already leased for oil and gas. Exploration is taking place, and exploration and development units exist. Therefore, the likelihood of leases in the area expiring in the future is slim. As a result, it is impractical to expect that enough unleased area will become available to allow different configurations of lease parcels in the future. Therefore, instead of developing a plan to reconfigure lease parcels, plans of development for the existing leases and unitized lease areas would be

required to ensure protection of the habitat and use by the elk. Additionally, some unleased areas may remain unleased, or may be leased with an NSO requirement for mineral exploration and development activities. This would be determined through a more site specific activity or implementation plan and analysis for the area, which would include further opportunity for public input.

BLM-administered public lands within the existing Greater Sand Dunes ACEC would be considered for mineral leasing. Following completion of the Green River RMP, a site specific activity or implementation plan, covering both the Greater Sand Dunes ACEC and the proposed Steamboat Mountain ACEC, would be developed. Specific concerns to be addressed in the activity or implementation plan include public health and safety, preservation of the unique values of the two adjoining areas, and opportunities for mineral development.

The Monument Valley Area has been expanded to include BLM-administered public lands along the Rock Springs BLM District boundary. The BLM-administered lands in the Monument Valley Area are not recommended for ACEC designation, as previously intended. That possibility will now be deferred because more resource information is needed to determine if the resource values in the expanded area meet the relevance and importance criteria for ACEC consideration.

The Tri-State Monument proposed ACEC has been renamed the Greater Red Creek proposed ACEC. The management prescription, designed to enhance watershed values and Colorado River cutthroat trout habitat, would remain as described in the preferred alternative of the Draft EIS. The majority of the area would be open to all resource use activities with appropriate mitigation. However, that portion of the area that is made up of the original Red Creek ACEC would be closed to mineral leasing and to the location of mining claims. The remainder of the area would be open to consideration for all mineral leasing and to the location of mining claims. The original Red Creek ACEC and the Currant Creek portion of the area would be closed to the sale of mineral materials. The remainder of the area would be open to consideration of the sale of mineral materials.

The ½ mile restriction for activities around rock art sites has been modified to apply only to the actual area that can be seen within a ½ mile from a rock art site (vista). The proposed Green River RMP identifies five rock art sites in the planning area where this vista concept would be applied. Where necessary, this concept would also be applied to other rock art sites in the future, on a case-by-case basis. Most surface disturbing activities on BLM-administered public lands that would be visible from a rock art site within this vista, would not be allowed. Some activities within ½ mile of a rock art site, but that would not be visible from the site, would be allowed. Other kinds of activities, such as audible disturbances, would not be allowed if they would adversely affect the sacred Native American religious values at a portion of the rock art site.

The recommendation for the Rock Springs expansion area located within the coal development potential area has been modified. The proposed Green River RMP identifies BLM-administered federal coal lands within the Rock Springs expansion area that would be unacceptable for further coal leasing consideration. This area would accommodate further growth of the city. Such industrial activity would not be compatible with residential use, and surface and subsurface mining could be a potential safety hazard.

Chapter 3 of the Draft EIS has been reprinted complete with tables and maps.

The socioeconomic information in the Affected Environment (Chapter 3) has been clarified and the oil and gas production and dollar figures have been corrected and updated. Also, some of the information has been modified to reflect slight changes that have occurred in the socioeconomic sectors since the Draft EIS was published. For instance, natural gas exploration and development on public lands in the Resource Area has expanded, trona development activity has expanded, and economic impacts to the livestock industry have reduced slightly. However, these changes were not large enough to cause a change in the reasonably foreseeable development scenarios or in the outcome of the impact analyses for any of the alternatives in the Draft EIS or for the proposed Green River RMP.

Updated tax and valuation figures received from the counties in the planning area have been included. Because of differing economic models and their projected impacts, new charts and tables showing Travel/Tourism figures and economic analyses from Sweetwater County are included in Appendix 10.

Recreation visitor days were increased substantially based on data received from the Wyoming Game and Fish Department and U.S. Forest Service Flaming Gorge National Recreation Area. The increased recreation visitor days changes are included in the socioeconomic appendix.

Chapter 4 of the Draft EIS has not been completely reprinted in this Final EIS. For a complete narrative description of the environmental consequences by alternative, refer to Chapter 4 of the Draft EIS. A summary of these consequences is presented in Table 2-2 of the Final EIS. The changes between the Preferred Alternative (Chapter 2 in the Draft EIS) and the Proposed Plan (Chapter 2 in this document) are not substantial relative to the objectives of the plan and are not expected to result in changes in impacts. Those changes that did result are reflected in Chapter 4 of this document.

The cumulative impact analysis has been updated and clarified in response to comments received. Because of the recent and unanticipated level of increased interest in mineral development in the planning area, and new projects initiated since the Draft EIS was published, we considered impacts of activities occurring in a larger area than the Green River Resource Area.

The previously anticipated coalbed methane development did not materialize. This is partially because the coalbed methane tax incentive has lapsed. For this reason, the separate coalbed methane development socioeconomic analysis has been deleted from this Final EIS. The coalbed methane socioeconomic information is included in the Management Situation Analysis, on file at the Green River Resource Area Office. The potential for coalbed methane development in the planning area still does exist, and projections are still included in the oil and gas reasonably foreseeable development scenario for the proposed Green River RMP. Anticipated methane production is also included in the overall natural gas production figures for the resource area.

Chapter 5 describes the consultation and coordination that occurred throughout the planning process. It has been updated and reprinted in this document.

Chapter 5 also describes the comments received from open houses, meetings, and comment letters on the Draft EIS and BLM's responses to those comments.

Appendix 1-3 has been added to show the relevance and importance criteria for identifying potential areas of critical environmental concern (ACECs) that were considered in the Draft EIS. Three new ACECs are proposed and two previously existing ACECs are proposed for modification.

Appendix 3-3 in the Draft EIS has been incorporated into Appendix 3-2 in the Final EIS to reduce duplication and present the material more clearly.

SUMMARY

Appendices 5-1, 5-2, and 5-3 in the Draft EIS have been summarized and combined into two comprehensive appendices for the Final EIS (Appendix 5-1 and Appendix 5-2). These appendices provide guidance for surface disturbing actions for all development activities.

The remaining appendices in the Draft EIS have been reprinted in this Final EIS document. The Glossary, References, and List of Preparers have been updated and reprinted in this document.

CHAPTER 1

PURPOSE OF AND NEED FOR THE PLANNING EFFORT

INTRODUCTION

The purpose for developing the Green River Resource Management Plan (RMP) is to provide an updated comprehensive and environmentally adequate framework for managing and allocating uses of public lands and resources that are administered by the Bureau of Land Management (BLM) in the Green River Resource Area. This effort is directed at identifying needed changes in the 1981 Management Framework Plans (MFPs) now covering the planning area because of policy and management changes that have occurred since that time.

The draft environmental impact statement (EIS) for the Green River RMP documented the description of the alternatives that were analyzed (current and alternative management plans) for the planning area and their consequences. The Draft EIS, and the public comments submitted on the Draft EIS, provided the basis for developing the Proposed Green River RMP in this Final EIS. This proposed plan was developed to resolve the resource and land use issues involved with current management and to provide the future direction for site-specific activity planning and implementation of management actions in the planning area. The approved Green River RMP will supersede all existing management framework plans and other general planning decision documents for the planning area.

Until the Green River RMP is completed, daily management decisions will continue to be based upon the existing Big Sandy and Salt Wells MFPs covering the planning area.

When completed, the Green River RMP will be kept current through minor maintenance, or through amendments and revisions, as demands on public lands and resources change, as the land and resource conditions change, or as new information is acquired. Monitoring and evaluation of the RMP will be conducted as necessary. Criteria would be established for each evaluation and would include any related Supplemental Program guidance, National Environmental Policy Act (NEPA), policy, and regulatory requirements. Major actions or changes in regulations may require some changes to the RMP within short time frames.

DESCRIPTION OF THE PLANNING AREA

The general planning area for the Green River RMP is the BLM Green River Resource Area, which includes portions of Sweetwater, Lincoln, Sublette, Fremont, and Uinta counties in southwestern Wyoming (Map 1).

As provided by the Federal Land Policy and Management Act (FLPMA), the BLM has the responsibility to plan for and manage the "public lands." As defined by the Act, the "public lands" are those Federally owned lands, and any interest in lands (e.g., Federally owned mineral estate), that are administered by the Secretary of the Interior, specifically through the Bureau of Land Management. Within the Green River RMP planning area, there are varied and intermingled land surface ownerships and overlapping mineral ownerships. Therefore, the administrative jurisdictions for land use planning and for managing the land surface and minerals are also varied, intermingled, and overlapping (Maps A and B).

Because of this situation, the completed Green River RMP will not include planning and management decisions for lands or minerals within the planning area that are privately owned or owned by the State of Wyoming or local governments. Providing direction for the surface or minerals management of these lands is not within BLM's jurisdiction. In addition, the completed RMP will not include planning and management decisions for those Federally owned minerals within the planning area, that are overlapped by Federally owned land surface that is administered by other Federal agencies. Table 1-1 summarizes the land surface and mineral ownerships and administrative relationships for the area (Map 2).

PLANNING ISSUES

Issue identification is the first step of the BLM planning process. The planning process is illustrated in Figure 1 and described in detail in Appendix 1-1.

Planning issues are determined from demands, concerns, conflicts, or problems regarding the use or management of the public lands and resources. These are usually expressed in terms of the effects that some land and resource uses have on other land and resource uses or resource values. The following planning issues were identified through public scoping and information gathered in analyzing the existing management situation in the Green River RMP planning area. They are based on the input of BLM personnel, the public, and interagency consultation.

Issue 1: Minerals Resource Management and Rights-of-Way

Special attention is needed to address mineral development and transportation network conflicts with other land and resource uses and values. Principal considerations include conflicts with elk, moose, deer, and fisheries habitat, recreation values, forage uses, air quality, and sensitive watersheds. Areas where surface-disturbing activities (e.g., mineral exploration and development activities, right-of-way construction activities, etc.) are suitable, not suitable, or should be restricted, need to be identified.

Issue 2: Land Tenure Adjustment and Resource Accessibility

There are some areas in the planning area that are isolated and difficult to access (i.e., legal and physical access) and manage. Land disposals and acquisitions, and access acquisitions could provide improved access to and manageability of public lands.

Issue 3: Resource Uses Affecting Vegetation, Soils, Air, and Watershed Values

There are conflicting demands for consumptive and nonconsumptive uses of the vegetation resources in the resource area. The basic problem is providing for resource values and nonconsumptive uses while allowing consumptive uses. Resource values include maintenance of general vegetative cover; watershed protection; maintenance and enhancement of riparian areas; soil stabilization; maintenance and enhancement of wildlife habitat (particularly big game crucial winter range and habitat for candidate or threatened and endangered species); and air quality protection. Consumptive uses include livestock grazing; timber harvest; off-road vehicle use; and vegetation removal by mineral development, rights-of-way construction, and other surface disturbing activities.

Issue 4: Recreation and Cultural Resource Management

There are certain resources and areas that need protection while others need to be considered for more public and recreational uses. Off-road vehicle (see Glossary for definition) use can conflict with other land and resource uses and can cause damage to resources, including wildlife and watershed values and other recreation values. Principal considerations include providing for suitable and sufficient recreation uses and facilities (both dispersed and commercial), visual resource management direction, off-road vehicle use designations, and management of cultural and historical resources.

Issue 5: Special Management Areas

There are unique and important areas, values, or resources in the resource area that meet the criteria for protection and management under special management designations. There are also seven areas already designated as areas of critical environmental concern (ACEC) that contain unique resources requiring special management attention.

PLANNING CRITERIA

Planning criteria are the conditions and guidelines or parameters for conducting the planning effort, for preparing the RMP EIS and for developing the approved RMP. The planning criteria serve the following purposes:

1. To ensure that the planning effort is focused on the issues, follows and incorporates legal requirements, addresses management of all public land resources and land uses in the planning area, and that plan preparation is accomplished efficiently;
2. To identify the scope and parameters of the planning effort for the decision maker, the interdisciplinary planning team, and the public; and
3. To inform the public of what should and should not be expected from the completed RMP, including identification of any planning issues that are not ready for decision-making in the RMP and that will be addressed only through subsequent planning efforts.

Planning criteria are based on standards prescribed by laws and regulations, guidance provided by the BLM Wyoming State Director, the results of consultation and coordination with the public and with other agencies and governmental entities, and Indian Tribes, analysis of information pertinent to the planning area, public input, and professional judgment.

General Planning Criteria

The general planning criteria described in Appendix 1-2 have been developed to help focus the preparation of planning and management alternatives and the analysis of their impacts (in both the Draft and Final EIS), and to guide selection of the proposed RMP for the Final EIS.

Planning Criteria for Specific Situations

Criteria for Use of Standard Mitigation Guidelines

The Wyoming BLM has developed "standard mitigation guidelines" for use in determining the types and levels of mitigation needed to protect important resources from actions involving surface disturbance and other human-presence disturbance or disruptive activities. These guidelines will be used in the RMP EIS process for (1) developing the alternatives for the RMP EIS and analyzing the impacts of the alternatives; and (2) as part of the planning criteria for developing the alternatives and for determining mitigation requirements to be included in the approved RMP. The "Wyoming BLM Standard Mitigation Guidelines for Surface-Disturbing Activities" are detailed in Appendix 2, which also contains further information on how they are used in the RMP EIS process.

Mitigation requirements (including restrictions on surface occupancy and/or surface activity and use) are applied as conditions of land and resource use for the following reasons: (a) to protect important cultural resources, recreational values, and wildlife resources (including threatened, endangered, or candidate species); (b) to minimize soil movement on slopes; (c) to minimize disturbance of vegetation in sensitive areas such as wetland/riparian areas; or (d) to protect visual resources and historic trails.

As appropriate, surface-disturbing activities would be subject to one or more of the mitigation requirements exemplified in the standard mitigation guidelines. The general types of mitigative measures to be used in the planning area and the acreage that would be affected are described in the discussion of each alternative. On lands where the federal surface is administered by other agencies and the federal mineral estate is administered by the BLM, the Wyoming BLM Standard Mitigation Guidelines would only be applied where the surface managing agency has not developed other surface protection mitigative measures or stipulations that are needed. On lands affected by BLM actions where the ownership is private or state, regardless of the mineral ownership, the standard mitigation guidelines would be applied to the land surface areas where the actions authorized by the BLM could (a) cause adverse on-site or off-site effects on threatened or endangered or candidate species or on cultural resource values; or (b) cause adverse off-site effects on any resource values on any other lands.

Mitigation requirements ultimately included in the approved RMP, that are developed through the use of the standard mitigation guidelines, could later be waived, modified, excepted or combined with other conditions of resource use (a) as a result of addressing situations beyond the analysis level of this RMP EIS (e.g., development and analysis of an activity plan or a site-specific project proposal), (b) if the conditions that originally warranted a restriction (such as the presence of an active raptor nest) no longer existed, or (c) if the location of a proposed activity or use were to be moved to avoid such conditions. Conversely, mitigation requirements that are not identified in the approved RMP could be applied to address situations or resource values either not present or not identified at the time the RMP was developed, but that are later identified through site-specific investigations (for example, a newly discovered raptor nest or newly identified cultural resources). Addition or modification of mitigation requirements generally would be allowable as long as modified conditions of use did not prohibit the exercise of valid existing rights.

Criteria for the Coal Screening/Planning Process

The previous coal screening and planning for management of the federal coal resources in the planning area were conducted in 1981 (Appendix 3-1). These coal screening data and planning decisions have become outdated and will only be used for describing existing coal management in Alternative A (i.e., continuation of existing management direction, or the "no action" alternative) of this RMP EIS.

A complete, new application of the coal screening process, including application of the Coal Unsuitability Criteria (43 CFR 3461) (Appendix 3-2) was completed in the course of this current planning effort. The suitability criteria have been reapplied to the coal potential area (Map 3) and the results tabulated in Appedix 3-2. When completed, the coal planning decisions in the approved Green River RMP, identifying those federal coal areas that are acceptable for further consideration for leasing, will supersede the existing coal decisions for the planning area.

During the planning effort, other federal agencies, state and local governments, Indian tribes, and other publics will be consulted as specified in 43 CFR 3420.1-6,.1-7.

Criteria for Hydrocarbon Potential

As an aid in developing alternatives for the RMP EIS, special criteria were developed relative to the leasing and development of carbon-based minerals (oil, gas, coal, and coalbed methane). By inference from available geologic information, reports of past production, and information from the minerals industry, the Green River Resource Area was determined to have a high potential for the occurrence of fluid hydrocarbons, and to have areas of high and moderate potential for the occurrence for coal.

This information along with analysis of past mineral activity and production, was then utilized to develop Reasonably Foreseeable Development scenarios for fluid mineral development and coal development. These scenarios are used as assumptions to aid in analysis of impacts.

Because they are so broad, these resource occurrence and development potential classifications, developed for planning purposes, are not appropriate for or intended to predict future activity or the locations of new discoveries.

Criteria for Locatable Minerals Potential

Special criteria were developed relative to the potential for the occurrence of locatable minerals such as zeolite, gold, jade, etc. Areas of potential were derived to facilitate analysis of the effects that the variety of other land and resource uses and management actions would have on locatable minerals development. This evaluation is only based on a representative analysis by inference and does not imply that there may or may not be other, undiscovered locatable minerals, of economic value in the Green River RMP planning area.

Areas identified as having potential for the occurrence of locatable minerals, include areas with current or past mining activity, areas where mining claims are located, areas where mineral occurrence has been proven from some type of activity (such as stratigraphic test holes), and areas where geologic formations are known to include locatable mineral occurrences (like zeolite, gold, jade, etc.).

Criteria for Withdrawals and Classifications

Section 204(l) of FLPMA, requires the periodical review of withdrawn and classified lands to determine whether existing withdrawals and classifications are serving or needed for their intended purposes. These reviews and resulting determinations are not a part of the BLM planning process. That is, a determination that an existing withdrawal or classification is no longer needed and should be terminated is not a planning decision; it is merely a disclosure of fact, based on the review. However, deciding how the involved lands are to be managed, if or after the withdrawal were to be terminated, may be a function of the planning process and may require a BLM planning decision in the RMP. As explained below, this depends upon whether or not the lands within the existing withdrawal or classification are under BLM jurisdiction, or under jurisdiction of another agency or governmental entity, and whether or not the BLM will have jurisdiction over part or all of the involved lands, if the withdrawal or classification is terminated.

1. Withdrawals and Classifications Under Other Agency Jurisdiction

The withdrawal review requirement of the FLPMA has not yet been completed on those federal lands withdrawn for the Seedskadee National Wildlife Refuge or for the Eden/Farson and Seedskadee Irrigation Projects. These withdrawn lands are, respectively, under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS), and the Bureau of Reclamation (BOR). For the purposes of the Green River RMP EIS, it must be assumed that this will continue to be the case, and that the planning and management authorities for these lands will remain with those agencies.

Therefore, the Green River RMP will not include any planning or management decisions for either the Federal land surface or Federal minerals within the administrative boundaries of these withdrawn areas. These lands will only be considered in conducting the environmental analysis for the Green River RMP EIS, in terms of cumulative impacts and in terms of how they may be affected by management in the planning area or vice versa. When the withdrawal review is completed and, if it is determined that any part of the withdrawals are to be terminated and that the BLM is to acquire jurisdiction over any of the affected lands, the BLM will, then, conduct land use planning on the involved lands and appropriately incorporate the planning and management decisions for them into the Green River RMP.

2. Withdrawals and Classifications Under BLM Jurisdiction

Where the review of withdrawals and classifications on any lands under BLM jurisdiction results in determining that any part of the withdrawals or classifications are no longer serving their intended purposes and are to be terminated, the planning and management decisions for the affected areas will also be reviewed to determine if and how the management of the involved lands should change. This latter review is done as an integral part of the RMP EIS process, including public involvement, to establish any needed changes in the management of the involved lands, before the existing withdrawals or classifications are terminated, and includes consideration of whether or not new withdrawals or classifications, for other purposes, should be placed on any of the lands in question.

For purposes of providing an adequate comparison of impact analyses in this RMP EIS, under Alternative A (no action), all existing withdrawals and classifications, and their segregative effects, are assumed to continue in effect. The other alternatives will address various changes in management for the areas where termination of withdrawals or classifications under BLM jurisdiction are being considered.

Criteria for Wilderness

Wilderness management will not be addressed in the Green River RMP EIS. Management of wilderness study areas (WSAs) within the planning area is addressed in two other documents, the Rock Springs District Final Wilderness EIS (August 1990) and the Adobe Town-Ferris Mountains Final Wilderness EIS (December 1987). Within the planning area, there are approximately 223,500 acres of BLM-administered public land in WSAs, of which approximately 98,700 acres have been recommended for designation as wilderness and are pending Congressional decision (see Map 4). When Congress makes decisions regarding the WSAs in the planning area, they will be incorporated into the Green River RMP. Until Congress acts, these WSAs will be managed under the "Interim Management Policy and Guidelines for Lands Under Wilderness Review" (USDI 1987). No other potential wilderness areas in the planning area have been identified for wilderness review.

Should Congress designate any of the WSAs (partially or wholly) as wilderness, the management of the designated areas will be in conformance with the Wilderness Act of 1964 and as described in the above-mentioned Wilderness EISs and/or in the designation legislation. Wilderness activity plans will be prepared for any wilderness areas designated by Congress.

Should Congress not designate part or all of any of the WSA areas as wilderness, the management of the nondesignated areas will be in accordance with the approved Green River RMP. The nondesignated areas will lose their identity as WSAs and will be managed along with the adjoining land area as prescribed in the approved Green River RMP.

Except on Map 4, the WSAs in the planning area also lose their identity in this RMP EIS. This was done to avoid confusion with the various management proposals in the alternatives that include either portions or all of some of the WSAs within larger areas that are proposed for some special management emphasis or designation (e.g., ACEC, Historic Landscape, Special Recreation Management Area). It must be understood that neither this RMP EIS nor the approved Green River RMP will address management prescriptions specifically for the WSAs. If WSAs are included in a special management area with management prescriptions that are more stringent than wilderness management prescriptions, the WSA would be managed under those more stringent prescriptions. Where this occurs, it is to be assumed that the more stringent management prescriptions would apply, whether or not the areas involved were designated as wilderness.

Criteria for Areas of Critical Environmental Concern (ACECs)

The ACEC criteria are found in BLM Manual 1613. The criteria for evaluation of ACECs in the Green River RMP planning area were filed in the MSA documentation and not printed in the Draft EIS. However, based upon public comments on the Draft EIS, these criteria have been placed in Appendix 1-3 along with their application to specific areas considered during the planning effort. Because public comments indicate that some people have misunderstood ACEC designations and think they are like wilderness areas, it is pointed out that (1) ACEC designations by BLM apply only to the surface of BLM-administered public lands; (2) ACEC designations by themselves do not change the allowed uses of public lands (FLPMA-Sec. 201(a) and 43 CFR 1601.0-5a); (3) an ACEC designation is not a substitute for a wilderness suitability recommendation (BLM Manual 1613.06); (4) protective measures are not applied or required in ACECs simply because of the designation, instead, the nature of the important values, resources, or natural hazards of the ACEC determine the appropriate level of protection needed; and (5) the only automatic protective requirement due to an ACEC designation is that a "plan of operations" is mandated for mining claim development, even for small disturbances (43 CFR 3809.1-4).

Criteria for Wild Horses

The Green River RMP EIS will consider appropriate management levels for wild horses in accordance with an existing court order and related agreements.

In March 1981, in response to litigation brought by Mountain States Legal Foundation, the District Court ordered BLM to "remove all wild horses from the checkerboard grazing lands in the Rock Springs District except that number which the Rock Springs Grazing Association voluntarily agrees to leave in said area."

The currently used appropriate management levels for wild horses were based on the numbers agreed to in previous land use plans. The appropriate management level for wild horses in the solid block public land areas was not changed from the numbers agreed to by the Rock Springs Grazing Association, because any additional numbers allowed on solid block public land would, at some point, be found on checkerboard lands covered by the District Court Order.

The management of wild horse populations must be in compliance with the District Court Order. Therefore, it is assumed that wild horse numbers in compliance with the District Court Order are those numbers agreed to by the Rock Springs Grazing Association, and that any wild horses above that number are "excess", in the meaning of the Act, which are subject to gathering.

Criteria for Wild and Scenic Rivers

The Green River RMP EIS will identify and address BLM-administered public lands along waterway segments that meet the Wild and Scenic Rivers Act eligibility criteria and suitability factors to be given further consideration for inclusion in the National Wild and Scenic Rivers System. In addition, each BLM-administered land parcel that meets the suitability factors will be appropriately classified (Wild, Scenic, or Recreational) and an interim management prescription for such lands will be developed and included in the approved Green River RMP. Appendix 4-1 describes the specific criteria utilized to determine eligibility and suitability of BLM-administered public lands along waterways to be given further consideration for inclusion in the National Wild and Scenic Rivers System. The wild and scenic rivers review conducted in the Green River RMP planning area is summarized in Appendix 4.

TABLE 1-1

LAND AND MINERAL OWNERSHIPS AND ADMINISTRATIVE JURISDICTIONS WITHIN THE GREEN RIVER RMP PLANNING AREA

Areas the Green River RMP Decisions WILL Cover:	**Approximate Acres[1]**
A. Areas where the land surface and mineral estate are both Federally owned and are both administered by the BLM[2]	3,500,000
B. Areas where the land surface is Federally owned and administered by the BLM and the mineral estate is owned and administered by private individuals, the state of Wyoming, or local governments[3]	135,000
C. Areas where the land surface is owned and administered by private individuals, the state of Wyoming, or local governments and the mineral estate is Federally owned and administered by the BLM[4]	81,000
Total BLM administered federal land surface to be covered by RMP decisions	3,635,000
Total BLM administered federal mineral estate to be covered by RMP decisions	3,581,000
Areas the Green River RMP Decisions Will NOT Cover:	
D. Areas where the Federal land surface is administered by the Forest Service and the Federal mineral estate administered by the BLM[5]	85,000
E. Areas where the Federal land surface is administered by the Bureau of Reclamation and the Federal mineral estate is administered by the BLM[5]	175,000
F. Areas where the Federal land surface is administered by the U.S. Fish and Wildlife Service and the Federal mineral estate is administered by the BLM[5]	7,800
Total BLM administered federal mineral estate that will NOT be covered by RMP decisions	267,800
G. Areas where the land surface and minerals are both owned by private individuals, the state of Wyoming, or local governments and the BLM has no administrative authority[6]	1,370,000
Total land surface acres in the Green River RMP planning area (all ownerships)[1]	5,359,000

[1] Because of land surface and mineral ownership overlaps and administrative responsibility overlaps, acreage figures are not additive.

For the purpose of the Green River RMP planning effort, areas where one or more of the mineral resource categories are Federally owned, are defined and addressed as if all minerals in the area were Federally owned. Where mixed minerals ownership occurs (for example, privately owned oil and gas, overlapping with Federally owned coal in the same area), minerals planning and management decisions in the RMP will only pertain to the Federally owned minerals.

TABLE 1-1 (Continued)

LAND AND MINERAL OWNERSHIPS AND ADMINISTRATIVE JURISDICTIONS WITHIN THE GREEN RIVER RMP PLANNING AREA

[2] In areas where the Federal land surface and Federal mineral estate are both administered by the BLM, the RMP will include planning and management decisions for both the land surface and the mineral estate.

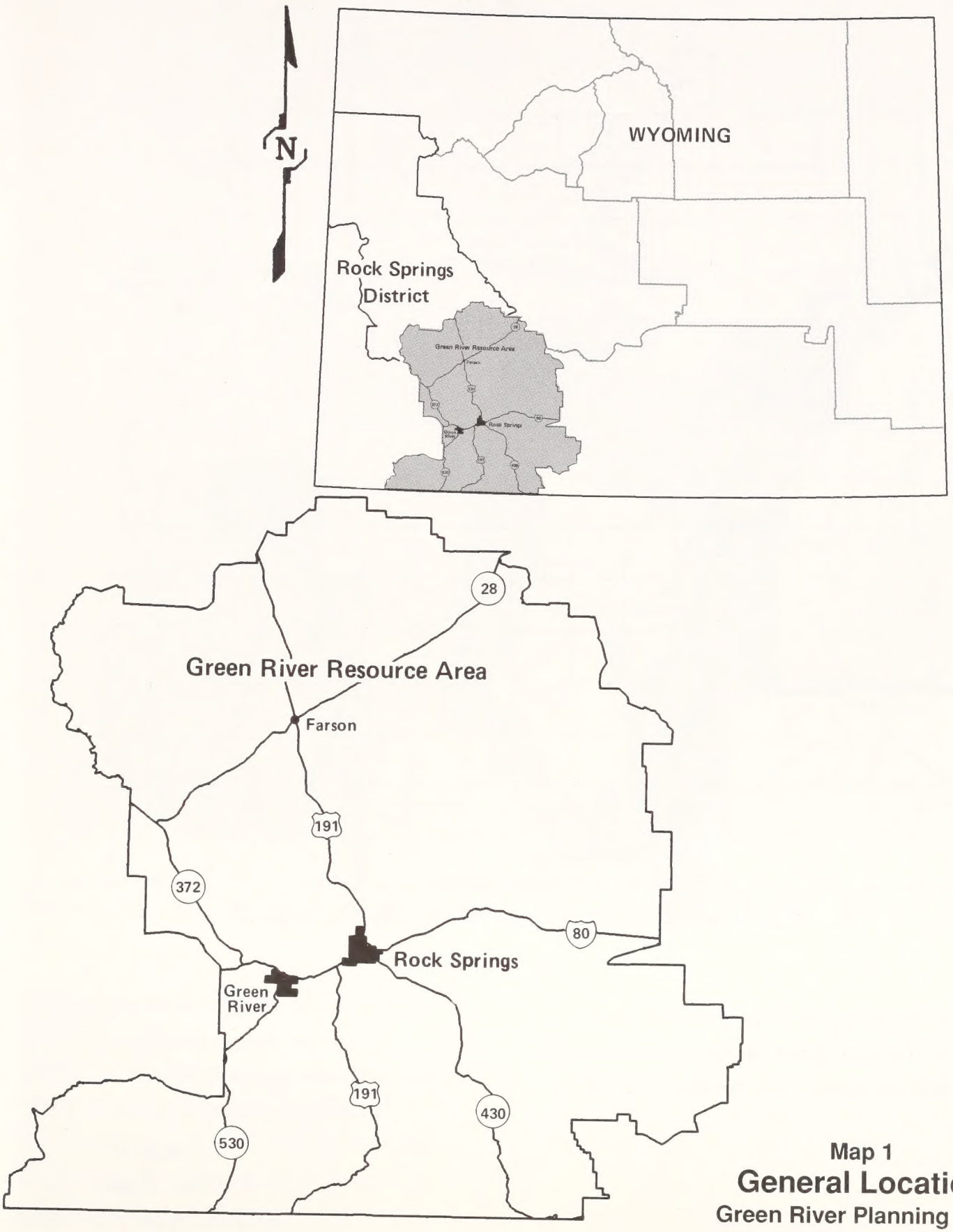
[3] In areas where the Federal land surface is administered by the BLM, and the minerals are privately owned or owned by the State of Wyoming or local governments, the RMP will include planning and management decisions for only the BLM-administered Federal land surface. While these surface management decisions may have some affect on the ability to manage and develop the non-Federally owned minerals, the RMP planning and management decisions will not pertain to the non-Federal mineral estate. At the same time, surface and minerals management actions and development activities anticipated in these areas will be taken into account for purposes of cumulative impact analysis in the Green River RMP EIS.

[4] In areas where the land surface is privately owned or owned by the State of Wyoming or local governments, and the minerals are Federally owned, the RMP will include planning and management decisions for only the BLM-administered Federal mineral estate. While the land and resource uses and values on the non-Federal surface will be taken into account and will affect development of the Federal mineral planning and management decisions, these decisions will not pertain to the state and privately owned land surface. At the same time, surface and minerals management actions and development activities anticipated in these areas will be taken into account for purposes of cumulative impact analysis in the Green River RMP EIS.

[5] In areas where the Federal land surface is administered by the Forest Service, the Bureau of Reclamation or the Fish and Wildlife Service, and the Federal mineral estate is administered by the BLM, the land surface planning and management decisions are the responsibility of these "other" Federal surface management agencies. Any BLM administrative responsibilities within these areas (for example, actions concerning the Federal mineral estate) are handled case by case and are guided by the other surface management agencies' policies, procedures, and plans. Thus, the Green River RMP will not include planning and management decisions for the Federal minerals in these areas. At the same time, surface and minerals management actions and development activities anticipated in these areas will be taken into account for purposes of cumulative impact analysis in the Green River RMP EIS.

It is also important to note that, while other BLM responsibilities include surface management of certain Federal lands withdrawn for purposes of the Bureau of Reclamation (BOR), they are carried out in accordance with an interagency agreement between the two agencies. Administrative jurisdiction (including land use planning) for these lands lies with the BOR.

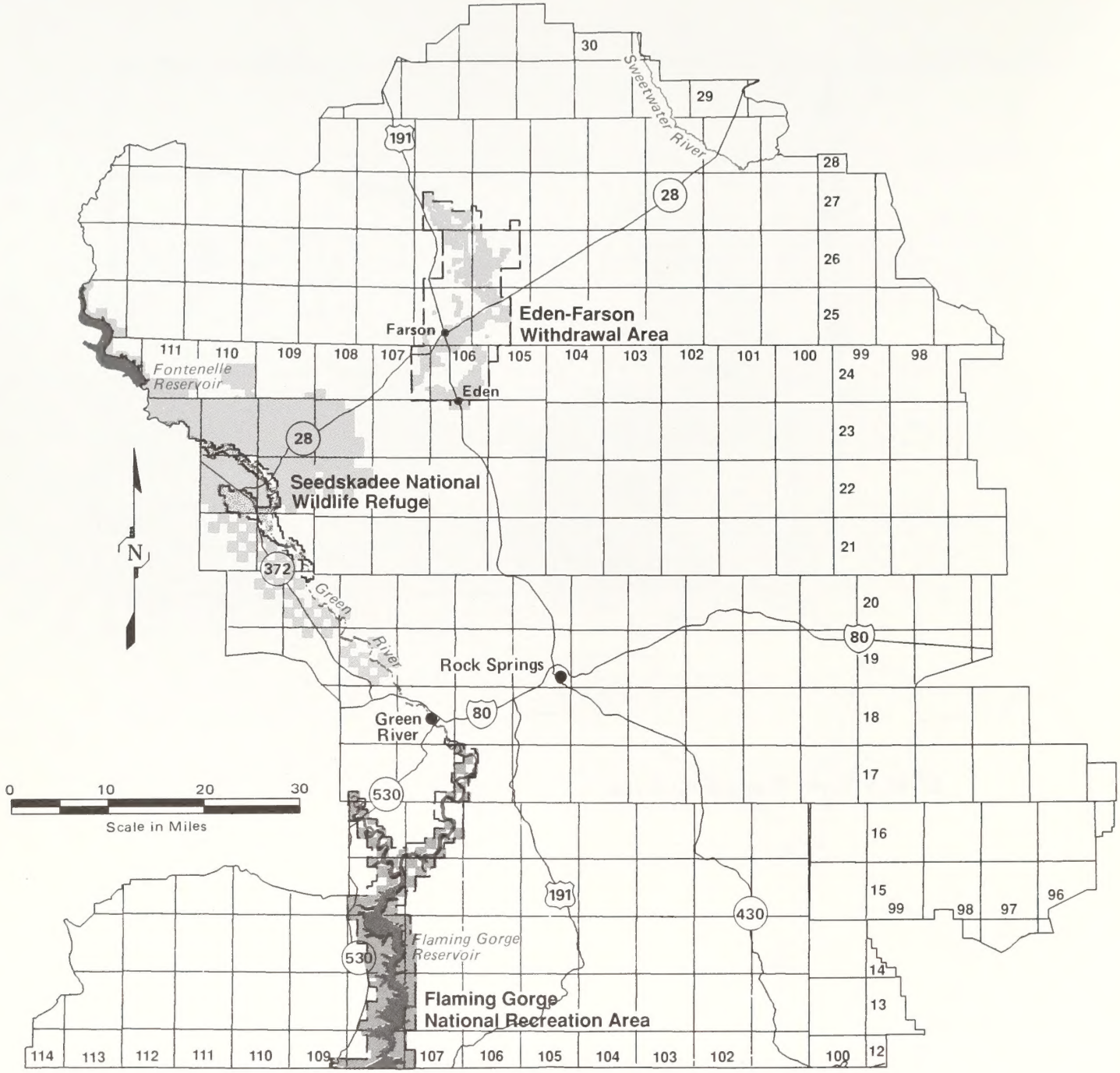
[6] The Green River RMP will not include any planning and management decisions for areas where the land surface and minerals are both privately owned or owned by the State of Wyoming or local governments.



Map 1

General Location

Green River Planning Area



Bureau of Reclamation Administered Land

U S Fish and Wildlife Service Administered Land

National Forest Service Administered Land

Map 2

Other Agency Administered Land

Green River Planning Area



Known Recoverable Coal Resource Area

Known Sodium Lease Area

Coal Occurrence and Development Potential

High Sodium Development Potential

Moderate Sodium Development Potential

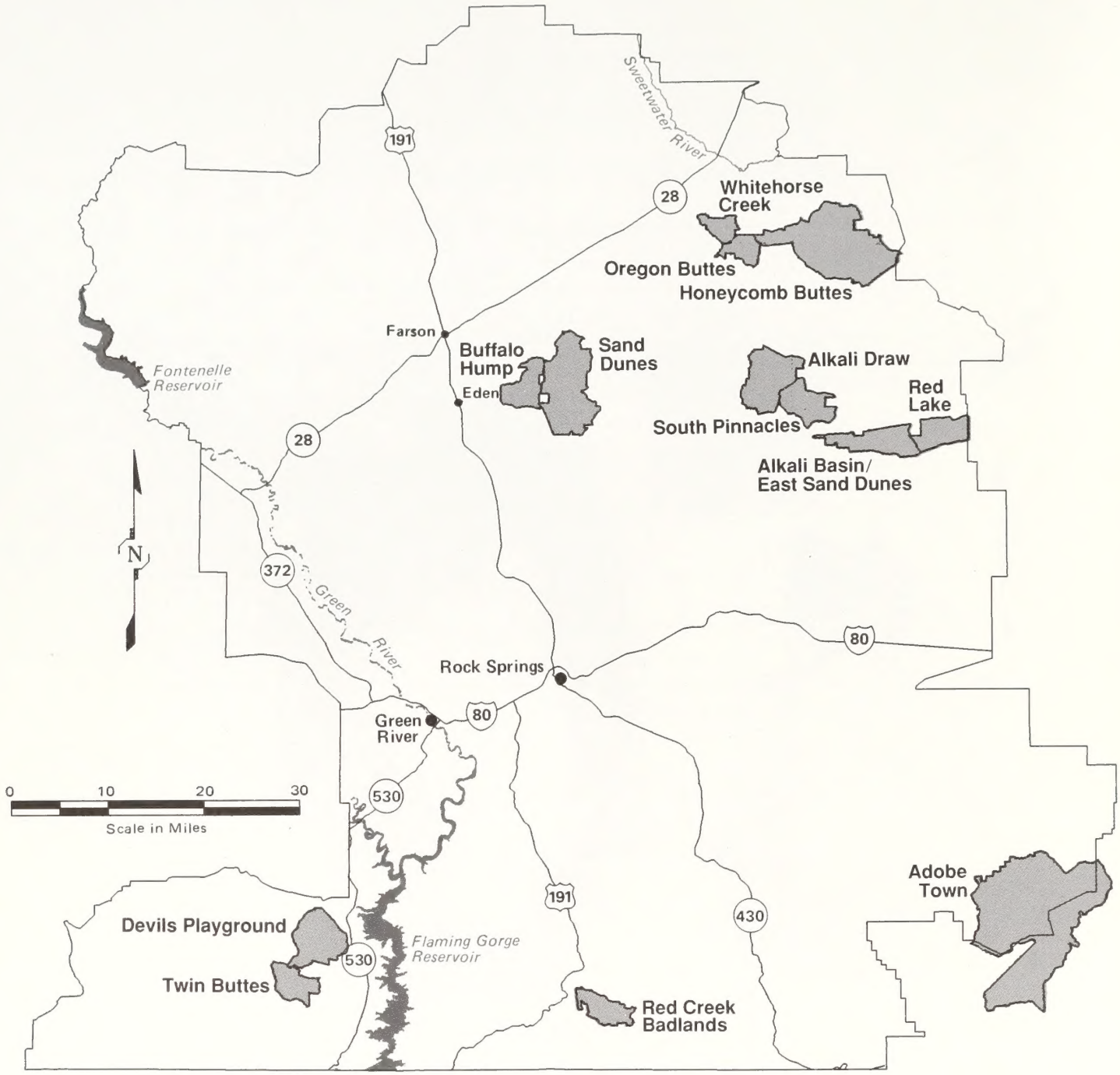
Low Sodium Development Potential

Brine Potential Development Area

Map 3

Coal / Sodium Potential

Green River Planning Area



Wilderness Study Area

Map 4

Wilderness Study Areas

Green River Planning Area

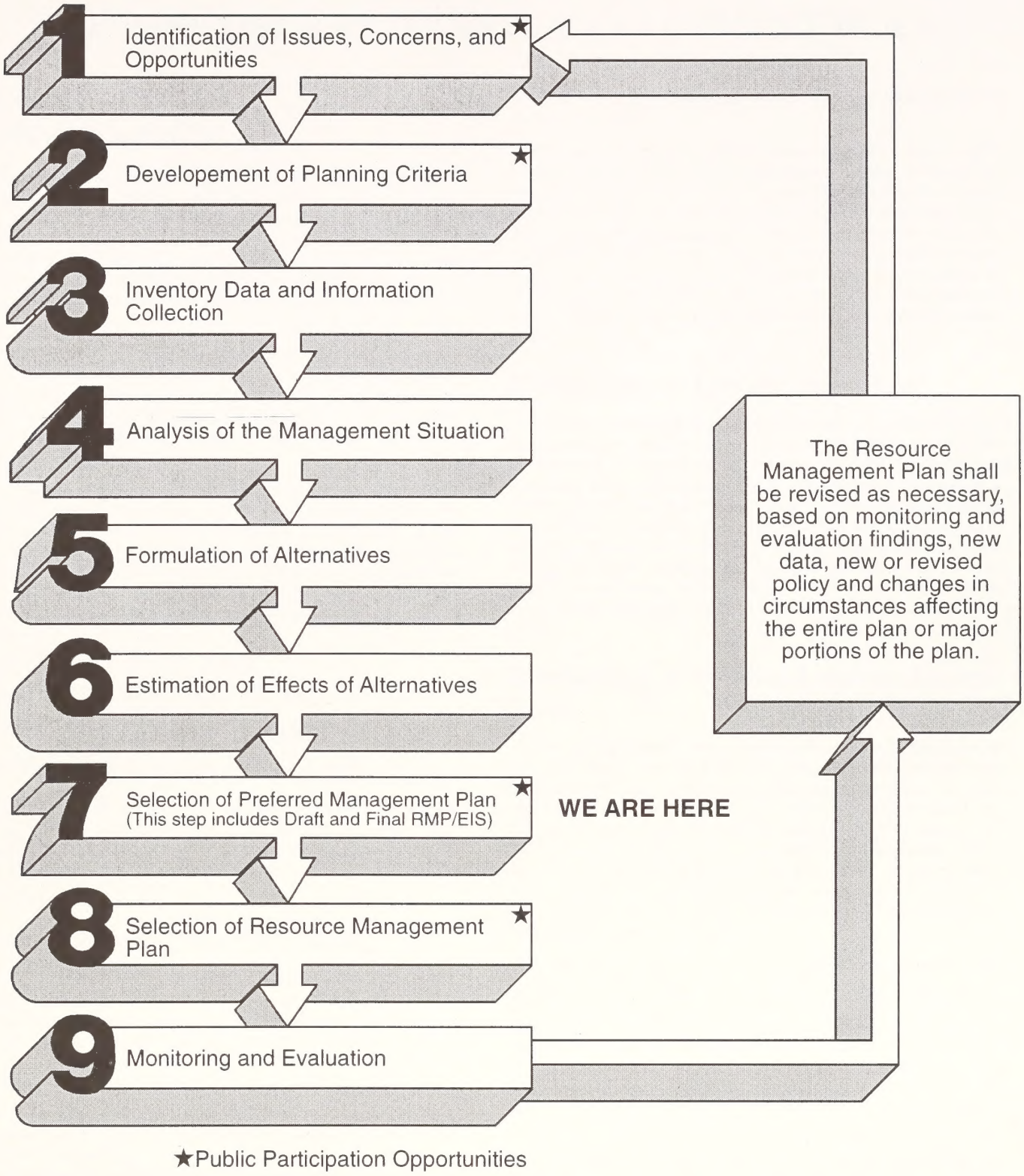


Figure 1

Planning Process

Green River Planning Area

CHAPTER 2

DESCRIPTIONS OF THE ALTERNATIVES, INCLUDING THE PROPOSED RESOURCE MANAGEMENT PLAN

ALTERNATIVE FORMULATION

Chapter 2 has been revised to include modifications and changes as a result of public comment, cumulative analysis, and new information. As a result, the Proposed Plan has been modified slightly from the preferred alternative in the DEIS. The Proposed Plan is presented in its entirety. The other alternatives are presented in Table 2-1 for the sake of brevity. Although the proposed plan is presented first, it is actually the last alternative developed in the planning process.

The BLM's proposed plan would generally place greater emphasis on protection of the natural environment compared to Alternatives A and B. It would also make more areas available for a variety of uses than Alternatives A, B, or C and would prescribe fewer restrictions on land use compared to Alternative C. The proposed plan was developed to balance production or commodity uses with protection of the environment.

An analysis of effects associated with each alternative is required by BLM planning regulations and the NEPA-based Council on Environmental Quality (CEQ) regulations. Comparison of the differences among the alternatives is also required. Based upon this comparative analysis, BLM managers are able to choose a proposed plan. The proposed plan is composed of portions of the other alternatives and incorporation of public comments.

ALTERNATIVES AND MANAGEMENT OPTIONS CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

The following alternatives and management options were considered as possible methods of resolving the planning issues and answering the planning questions, but were eliminated from detailed study because they were unreasonable or not practical due to technical, legal, or policy factors.

Elimination of Livestock Grazing

The elimination of livestock grazing from all public lands in the planning area was considered as a possible method of resolving some of the planning issues related to vegetative resources. However, the interdisciplinary team and managers determined that the "no grazing" alternative should be eliminated from detailed study for the following reasons.

Resource conditions on the BLM-administered public lands in the planning area, including range vegetation, watershed, and wildlife habitat, are generally satisfactory (as measured by BLM monitoring and professional observation). Therefore, it is not necessary to prohibit livestock grazing throughout the planning area. However, reduction or elimination of livestock grazing may be necessary in specific situations where livestock grazing would significantly conflict with other management objectives. Most determinations would be made during activity planning and would be based on several factors including monitoring studies.

Public comments received during the scoping process and during preparation of the draft RMP EIS indicated a general acceptance of livestock grazing on the public lands, provided such grazing is properly managed.

Because of the fragmented landownership pattern, especially in the checkerboard portion of the planning area, either exchanges to "block up" public lands would be required or extensive fencing would be needed to exclude livestock from public lands. It is doubtful that enough exchanges with private landowners could be accomplished to sufficiently "block up" public lands, and the amount of fencing needed to exclude livestock would be disruptive to wildlife movement and restrict public access. Also, a checkerboard pattern of fencing on every other square mile of land would be totally impractical.

Elimination of Timber Harvesting

Possible elimination of all timber harvesting on public lands in the planning area was considered. However, the 7,900 acres of BLM-administered forest lands in the planning area that are capable of sustaining forest production need to be managed to maintain a healthy, vigorous forest ecosystem. This requires systematic cutting (or harvesting or burning) of the timber over time to control disease and to provide vegetative diversity. Further, there is sufficient local demand for forest products to warrant continued forest harvest. Finally, not harvesting forest products (or managing the forest lands) would not be consistent with the BLM multiple use management policy.

Elimination of Mineral Leasing (Except Coal)

Closing the planning area to mineral leasing was considered to resolve conflicts with other resource uses. According to previous experience and activity expected in the future, oil and gas and trona would be the leasable minerals resources affected. This proposal was eliminated from further analysis because it would be contrary to BLM policy, that, except for congressional withdrawals, public lands shall remain open and available for mineral exploration unless doing otherwise is clearly in the national interest (May 24, 1987). In addition, this would be directly contrary to the BLM multiple use management mandate in FLPMA.

Elimination of leasing of oil and gas resources was considered in the Big Sandy/Salt Wells Oil and Gas Environmental Assessment (EA) (USDI 1981a). At that time, the proposal was determined to be unacceptable. A review of the proposal, during consideration of possible management options and alternatives for this RMP EIS, revealed that to eliminate leasing of federal oil and gas resources in the planning area continues to be unacceptable and to eliminate leasing of the other federal minerals in the area is also unacceptable.

Resource management of the planning area should respond to the need for oil and gas resources. However, not leasing portions of the planning area, in response to other identified resource needs, is addressed in the alternatives analyzed in detail.

Public comments received during issue identification and the development of planning criteria indicated general acceptance of mineral leasing and development, provided it is properly managed. It was further pointed out that, in most cases, leasable mineral exploration and development could take place in a manner that would avoid unacceptable adverse impacts to the other resources in the planning area.

In addition, nearly the entire planning area is covered by federal mineral leases and portions of the area are developed. This situation would continue for the entire time this plan is in effect. Eliminating federal mineral leasing in the planning area would not help resolve resource conflicts over the short term or the long term. Resource conflicts tend to be located in specific areas, not planning area wide, and closing the entire area would not be considered reasonable.

Surface Disturbance On or Around Special Status Plant Species

An alternative that would have allowed surface disturbing activities on or around special status plant species was considered but dropped from detailed analysis. Avoidance of impacts to known or potential special status plant species and their habitats is the only alternative that would prevent direct, significant impacts such as a loss of plants, habitat, and genetic variability essential to the future of the species. The BLM's Special Status Plant Species policy is aimed at preventing a decline in special status plant species which would motivate listing as Threatened or Endangered. Direct loss of these species from BLM authorized actions would thus place the BLM in non-compliance with its own regulations.

A Special Status Plant Species policy has been drafted to provide maximum protection for future special status plant species and to provide minerals and other activities with fair and reasonable notification of the work they would be responsible for prior to buying a lease or permit from the BLM.

Maximum, Unconstrained Alternatives

Alternatives and general management options that proposed maximum development, production, or protection of one resource at the expense of other resources were not analyzed in detail. The purpose of the approved RMP is to provide multiple use management direction for the planning area. Generally, promoting a single land and resource use by eliminating all others does not meet the objectives of the BLM's multiple use management mandate and responsibilities. However, the alternatives analyzed in detail do include various considerations for eliminating or maximizing individual resource values or uses in specific areas where conflicts exist.

Restrictions Less Stringent Than No Surface Occupancy (NSO)

One alternative which was considered and eliminated from detailed analysis was not mentioned in the Draft EIS. It relates to the level of restrictions necessary to protect resource values.

The intent of the planning process is to provide guidance for managing all resources within a level of use and restrictions that is appropriate for multiple use purposes. The objective is to minimize the use of overly restrictive limitations on resource uses. To help achieve this objective, mitigation measures less stringent than NSO for resource protection were considered for those areas recommended for NSO but were not presented in detail in the Draft EIS. This evaluation was conducted during the analysis of the Management Situation.

ALTERNATIVES ANALYZED IN DETAIL

Introduction/Overview

The descriptions of the four alternatives addressed in this RMP EIS are summarized in Table 2-1. The management actions that would occur in the planning area under each alternative are described by resource or resource program component. Following these descriptions for the general planning area, this same format is then used to describe the management actions for each proposed special management area in each alternative.

The comparisons of the expected environmental consequences of the alternatives are summarized in Table 2-2.

PROPOSED PLAN

The proposed plan provides the guidance which emphasizes neither resource utilization nor resource protection. The objectives described in this alternative would be used to make resource tradeoffs which could favor resource utilization, resource protection, or a compromise between them.

Air Quality Management

Management Objectives: The objectives for management of air quality would be to maintain and where possible enhance present air quality levels; to protect public health and safety and sensitive natural resources; and within the scope of BLM's authority, minimize emissions which may add to acid rain, cause violations of air quality standards, or reduce visibility.

Management Actions: Special requirements (e.g., use authorization stipulations, mitigation measures, conditions of approval, etc.) to alleviate air quality impacts would be included on a case-by-case basis in use authorizations (including mineral leases). Examples of such requirements would include: limiting emissions, spacing of source densities, requiring the collection of meteorological and/or air quality data, covering conveyors at mine sites (to lower dust emissions), and placing restrictions on flaring of natural gas (to reduce sulfur emissions). See Appendix 5-1 for specific guidance for applying air quality protection measures.

BLM would continue to participate with other agencies in the collection of air quality data and air quality pollution analysis (Appendix 5-1). The BLM would continue to cooperate and coordinate with the Forest Service, Environmental Protection Agency, and State of Wyoming in monitoring for atmospheric deposition (acid rain) and its impacts on the Class I airshed of the Bridger Wilderness. Collected air quality data would be used to determine actual or potential impacts from air pollutant emissions and to provide information on proposed emission sources.

Plant facilities would be authorized where they would minimize air quality impacts over the planning area, particularly the Flaming Gorge National Recreation Area; or cause heavy fog conditions that would be hazardous to public health, such as black icing of major highways, or such as extreme and continual fog that could inhibit transportation or recreation activities (see Sodium EA).

Cooperation to develop and apply visibility standards and guidelines would be encouraged. BLM would cooperate with Wyoming DEQ on review of air quality regulations which could impact BLM-managed activities.

Surface disturbing activities would be managed to prevent violation of air quality regulations (see the Wyoming AQ Regulations, Fugitive Dust Suppression Appendix in the Draft EIS). Construction and surface disturbing activities would be designed with dust control measures to reduce particulate matter and visibility impacts. Coordination with local and state agencies to control dust on unimproved dirt roads would occur where necessary.

See other resource management prescriptions in this document for other restrictions that may apply to air quality management activities.

Cultural, Natural History, and Paleontological Resource Management

Management Objectives: The objectives for management of the cultural and paleontological resources would be to: (1) expand the opportunities for scientific study, and educational and interpretive uses of cultural and paleontological resources; (2) protect and preserve important cultural and paleontological resources or their historic record for future generations; and (3) resolve conflicts between cultural/paleontological resources and other resource uses. Of particular concern would be significant sites of historic or prehistoric human habitation, sites demonstrating unique ethnic affiliation, places having traditional cultural or religious significance to Native Americans, and vertebrate fossil localities.

Management Actions: Sites listed on the National Register of Historic Places (NRHP) and NRHP eligible sites would be managed for their local, regional, and national significance, under the guidelines of the National Historic Preservation Act (especially sections 106 and 110) (Appendix 6-1) and the Archeological Resources Protection Act (ARPA) (Appendix 6-2). These sites would be managed to ensure against adverse effects through proper mitigation if disturbance or destruction is not avoidable. Sites that are not eligible for the NRHP would be managed on a case-by-case basis according to their values.

An appropriate level of analysis of all BLM undertakings would be conducted to determine National Register of Historic Places eligibility and potential effects to those historic properties within the area of potential effect in accordance with the National Historic Preservation Act (Appendix 6-1).

Significant paleontological resources would be managed for their scientific and educational values and in accordance with 43 CFR 3600, 3622, and 8365.

Incidences of potential violation of the Archeological Resources Protection Act would be investigated.

Historic Trails

Congressionally Designated Historic Trails and Associated Historic Sites

Management of the Oregon, Mormon Pioneer, California, and Pony Express National Historic Trails would provide for cooperation with the National Park Service in implementation of the Comprehensive Historic Trails Management Plan for the Oregon and Mormon Pioneer National Historic Trails. The area within ¼ mile or the visual horizon (whichever is less) of any contributing trail segment (125 miles, 39,500 acres) would be an avoidance area for surface disturbing activities (Map 5); developments such as roads, pipelines, and powerlines would be allowed to cross trails in areas where previous disturbance has occurred and the trail segment has lost the characteristics that contribute to its National Register significance.

Off-road vehicles, such as those used for geophysical exploration, or large heavy vehicles such as buses used in recreational tours, or similar activities, could cross and drive down the trails, provided a site specific analysis determines that no adverse effects would occur. Geophysical activities such as shotholes, blasting, and vibroseis locations could be allowed, generally, provided they are at least 300 feet from the trail, do not occur directly on the trail, and a site specific analysis determines that visual intrusions and adverse effects would not occur. No blading would be allowed on any historic trail unless necessary to protect life or property. Historic trails would not be available for use as industrial access roads (e.g., oil and gas drilling access roads, or as haul roads for heavy truck traffic).

The Parting-of-the-Ways historical site would be protected by closing it to exploration and development of locatable and salable minerals. A 40-acre withdrawal would be maintained. The site would be managed under the prescriptions for management in the Comprehensive Historic Trails Management Plan.

The integrity of the Dry Sandy Swales (1 mile, 20 acres) would be protected. The site would be closed to surface disturbing activities that could adversely affect it (see Lands and Realty Management and Minerals Management discussions). The ¼ mile area either side of the Dry Sandy Swales would be managed pursuant to the Comprehensive Historic Trails Management Plan.

Other Historic Trails And Historic Sites

Management of historic roads and trails that are eligible for the NRHP but are not Congressionally designated such as the Overland Trail, the Cherokee Trail, and the Point of Rocks to South Pass Road would generally be the same as for designated trails including a ¼ mile protective corridor (about 77 miles, 25,410 acres). These trails would be recommended for listing to the National Register of Historic Places.

LaClede Stage Station and Dug Springs Stage Station (20 acres) on the Overland Trail would be protected and would be closed to surface disturbing activities that could adversely affect the sites (e.g., activities associated with mineral exploration and development; construction of roads, pipelines, powerlines; mineral material sales; etc.) (see Lands and Realty Management and Minerals Management discussions). These sites would be closed to exploration and development of locatable minerals, and withdrawals would be pursued. Cultural resource management plans would be written for these sites, and interpretive and visitor management efforts would be allowed as necessary.

The Dry Sandy Stage Station and Fort LaClede would be considered for acquisition under a willing seller/willing buyer situation to enhance BLM management of important historic resources. The BLM would not use powers of condemnation to acquire these parcels.

Various Expansion Era (i.e., 1870-1940) roads would be managed according to their historical context. Expansion Era roads are those routes developed after establishment of the Transcontinental Railroad in Wyoming in 1869. Management actions would include development of activity plans with the objective of preserving significant NRHP contributing segments (estimated at about 10 miles of each of the 15 roads, about 150 miles) in their natural condition. Activity plans would include NRHP nomination of those Expansion Era trails that qualify. Management prescriptions similar to those in the Comprehensive Historic Trails Management Plan would be applied, although the ¼ mile protective corridor might not always be applied.

The Big Sandy Station, Big Timber Station, Freighter Springs Station, Camp Carmichael, Lander's Camp, and the site of the

Simpsons' Gulch wagon train burning would be managed for the preservation of cultural and historical values. Site specific resource management actions would be developed in cultural resource management plans for these sites.

Rock Art Sites

Rock art sites would be managed to protect their cultural and historical values. Interpretive signing, fencing, barriers, and other activities designed to manage visitor use at five well-known rock art sites (Cedar Canyon, LaBarge Bluffs, Sugarloaf, Tolar, and White Mountain) would be allowed as part of cultural resource management planning.

These five areas would be closed to surface disturbing activities that could adversely affect rock art resources (e.g., activities associated with mineral exploration and development; construction of roads, pipelines, powerlines, etc.) (see the discussion in Lands and Realty Management and Minerals Management for this alternative). The sites would be closed to the location of mining claims (withdrawals would be pursued as necessary), the existing Sugarloaf and White Mountain withdrawals would be retained, (see the Lands and Realty Management section); to mineral material sales for sand, gravel, or other types of construction or building materials; and to the use of explosives and blasting. These areas would also be limited to designated roads and trails for off-road vehicles including vehicles used for geophysical exploration activities (see the discussion on Off-Road Vehicle Management for this alternative), and to the use of fire retardant chemicals containing dyes.

Surface disturbing activities would be analyzed for the effects to the actual area seen from the rock art site for a distance of ½ mile surrounding the sites (vista, 1,600 acres). Most surface disturbing activities visible within this vista, for the five rock art sites, would not be allowed. Some activities within ½ mile of the rock art, but not visible from the rock art panels would be allowed. Other kinds of activities, such as audible disturbances would not be allowed if they adversely affected the sacred Native American religious values at the rock art sites. Site specific activity or implementation plans would be prepared for these sites.

All other rock art sites would be managed on a case-by-case basis according to resource values.

Site specific and time specific use limitations to accommodate traditional Native American religious practices at rock art sites or other cultural resources could be implemented by the Area Manager.

Other Sites

The Tri-Territory Marker (10 acres) would be protected by closing it to surface disturbing activities that could adversely affect it (e.g., activities associated with mineral exploration and development; construction of roads, pipelines, powerlines, etc.) (see Lands and Realty Management and Minerals Management discussions); to exploration and development of locatable minerals; and a withdrawal would be pursued. A cultural resource management plan would be prepared for the site if necessary. The site would be open for consideration of activities such as fencing, interpretive signs, or barriers to ensure protection to the area.

Archeological resources in developing areas such as the Little Colorado Desert, Greater Nitchie Gulch, and Wamsutter Arch concentrated oil and gas areas (that may be eligible for the NRHP under Criterion D) would be managed by synthesizing existing data with the objective of facilitating surface disturbing activities without sacrificing significant archeological values. A programmatic memorandum of agreement would be negotiated with the SHPO and ACHP to achieve this objective. Historic resources that could be eligible under NRHP criterion other than "D", (36 CFR 60 and Appendix 6-1) would not be managed according to this prescription.

Surface disturbing activities in playa lake areas (Blue Forest, 24,640 acres; Blue Point, 3,200 acres; and Adobe Town Rim, 1,280 acres) would be managed by developing programmatic memoranda of agreement for data recovery with the SHPO and ACHP. Each playa would be managed as an NRHP eligible historic district.

The Pine Springs ACEC (90 acres) would be protected and would be closed to surface disturbing activities that could adversely affect the archeological site (e.g., activities associated with mineral exploration and development; construction of roads, pipelines, powerlines; mineral material sales; etc.) (see Lands and Realty Management and Minerals Management discussions). The site would be closed to exploration and development of locatable minerals. The 90-acre withdrawal would be retained. Cultural resource management plans would be written for the site, and interpretive and visitor management efforts would be allowed as necessary (see also Pine Springs Expansion ACEC).

The Eden-Farson, Finley, Krmpotich, and Morgan archaeological sites and similar sites identified in the future would be managed to protect their important scientific values. These sites would be managed according to Sections 106 and 110 of the NHPA and their locations would be kept confidential pursuant to NHPA regulations. No public interpretive efforts would be initiated at these sites. Periodic law enforcement patrol and other efforts would be instituted to ensure that the ARPA is enforced and that these sites are protected.

All known human burial sites would be protected regardless of their ethnic affiliation. Management of Native American burial sites would take into account recommendations from appropriate tribes. Data recovery would not be the preferred method for mitigation of adverse effects to any burial location.

Known burial areas would be closed to surface disturbing activities that could adversely affect them (e.g., activities associated with mineral exploration and development; construction of roads, pipelines, powerlines; locatable mineral exploration and development; etc.) (see Lands and Realty Management and Minerals Management discussions).

The prehistoric quarry site would be protected by closing it to mineral location and pursuing a withdrawal. The site would be closed to surface disturbing activities that could adversely affect it (e.g., activities associated with mineral exploration and development; construction of roads, pipelines, powerlines; mineral material sales; etc.) (see Lands and Realty Management and Minerals Management discussions).

North and South Table Mountains (the Bozovich Site complex) would be managed to preserve cultural values within standard Section 106 and 110 NHPA compliance. The area would be closed to surface disturbing activities that could adversely affect the cultural sites (e.g., activities associated with mineral exploration and development; construction of roads, pipelines, powerlines; etc.) (see Lands and Realty Management and Minerals Management discussions), but would be open for consideration of activities such as fencing, interpretive signs, or barriers to ensure protection to the area. Appropriate scientific study of sites in this area would be a priority within the resource area cultural program.

Other Cultural and Paleontological Management Actions

Consultation with appropriate Native American tribes concerning areas of concern to them for traditional cultural and religious

purposes would occur in accordance with the American Indian Religious Freedom Act and BLM Manual 8160-1 Handbook. Native American consultation would occur within the context of specific development proposals, but would also be an ongoing process between BLM and affected Indian tribes and traditional cultural leaders.

Interpretive materials which describe the cultural resources of the area, their significance, and the bureau's responsibility toward these resources would be prepared. Historical aspects of all BLM programs would be interpreted as appropriate for public appreciation.

Exchanges for acquisition and cooperative agreements would be pursued to enhance management of cultural resources.

Collecting of vertebrate fossils may be allowed with written authorization which may be issued only to an academic, scientific, governmental, or other qualified institution or individual. Collection of common invertebrate fossils and petrified wood for hobby purposes may be allowed on public lands and is regulated under 43 CFR 3600, 3622, and 8365.

A site protection plan would be written and implemented for the Farson Fossil Fish Beds.

Surface disturbing activities that affect known vertebrate fossil localities would be considered in site specific analyses and potential adverse effects would be mitigated. At the Area Manager's discretion, mitigating measures may be required for surface disturbing activities occurring in areas having a reasonable chance for the occurrence of scientifically significant fossils. Mitigation measures may include surface inventory, construction monitoring, excavation/salvage, or other measures considered to be reasonable and appropriate by the Area Manager. Operators would be required to report any paleontological resources discovered during the course of operations.

The Steamboat Mountain and Boars Tusk-Killpecker Sand Dunes areas would be managed to protect the unique geological and ecological features and to provide for public interpretation of these features. The road around Boars Tusk would be closed.

See other resource management prescriptions in this document for other restrictions that may apply to cultural, natural history, and paleontological management activities. See also Special Management Areas (South Pass Historic Landscape, Pine Springs Expansion, Crookston Ranch (within the Greater Sand Dunes ACEC); White Mountain Petroglyphs ACEC, and Cedar Canyon ACEC).

Fire Management

Management Objectives: The objectives for fire management would be to use prescribed fire as a management tool to help meet multiple use resource management goals and to provide cost effective protection from wildfire to life, property, and resource values.

Management Actions: Wildfire suppression or control actions would emphasize fire containment or confinement. Immediate control actions would be used only in cases of arson, direct threat to public safety, or a strong potential to threaten structural property.

Suppression actions would be based on achieving the most efficient control and allowing historical acres burned to increase on confinement and containment actions.

Activity plans would be developed for designated fire management areas defining specific parameters for all fire occurrence (Figure 2).

Prescribed burning would be conducted so that ambient air quality standards would not be violated.

Heavy equipment or actions that would cause surface disturbance would be used only after a site specific analysis has been performed and approved.

Priority areas for wildfire suppression would be identified in the area fire management activity plans.

A site specific analysis would be prepared for sensitive areas such as special status plant species, cultural sites, historic trails, and ACECs to determine the type of fire suppression activity that would be acceptable. Activities that cause surface disturbance would be considered on a case-by-case basis.

Use of chemical fire suppression agents would be prohibited in rock art sites. Generally, use of chemical fire suppression agents would be prohibited in special management areas, unless or until an escaped fire situation analysis is completed or activity plans for the special management areas identifies chemical suppression agents as allowable use.

Wildfires occurring in forested areas would be suppressed as determined by resource values threatened on a case-by-case basis.

Wildfires occurring in or threatening a developed or active timber sale would receive priority control suppression action. Non-commercial stands may be included in prescribed fire activities. Standard management practices such as pile and broadcast burning would be permitted in all forested areas.

See other resource management prescriptions in this document for other restrictions that may apply to fire resource management activities.

Forests and Woodlands Management

Management Objectives: The objectives for management of forests and woodlands would be: 1) to provide for healthy forest resources and to meet primarily the objective of improved watershed, soils, recreation use, and wildlife habitat; and 2) to provide production of forest products in accordance with resource goals and objectives.

To improve forest resource values and other values (watershed, soils, wildlife habitat, and recreation); to maintain and enhance biological diversity; and to provide long-range view of desired plant community concepts at the landscape level; to identify old growth areas; and to provide appropriate management. (Long-term stand structure development would be an integral part of all forest management.)

Noncommercial forest lands (woodlands) would be managed to optimize cover and enhance habitat for wildlife, protect soil and watershed values, and complement recreation uses.

Management Actions: The planning area has been broken into 4 timber compartments for timber management: Wind River Front, Pine Mountain, Little Mountain, and Hickey Mountain-Table Mountain (Map 6). Hickey Mountain-Table Mountain would be managed under the woodland prescriptions described in this alternative. The Wind River Front would be a restricted forest management area where forest resources would be managed for commercial forest values, to improve the health, vigor, and diversity of forest stands, and still give full consideration to other resource values such as watershed, wildlife, minerals, recreation, and scenic values. Pine and Little Mountain areas would be managed to enhance other resources, and activities would be designed to benefit other resource uses. Harvest levels from all areas combined (about 7,900 acres) could average 500,000 board feet annually (Table 2-3). Priority harvest would be given to mature, decadent, and diseased trees.

Where possible, timber compartments (commercial and woodland forest lands) would be managed to meet the local demand for minor forest products (e.g., fuelwood, posts and poles, wildlings, and Christmas trees).

The major consideration in the harvesting program for the Wind River Front would be to improve the condition of the forest stand with emphasis meeting wildlife habitat needs. The major consideration in harvesting in other areas would be to provide the stability and habitat for watershed and wildlife needs. Soil, watershed, and wildlife cover would be important considerations. Stand conditions and management considerations would dictate harvest methods and size and shape of units.

Clearcutting would not be allowed within 100 feet of drainages or standing waters. Other logging activity, such as thinning or cable logging could occur within this 100 feet of this zone as long as it is determined that other resource values would not be adversely affected.

Cutting methods would include clearcutting, individual tree marking, shelter wood, thinning, and group selection. Clearcut units would not exceed 25 acres in size unless a site specific analysis indicates RMP resource objectives would be met with a larger cut. All clearcuts would consider other resource values such as escape cover for wildlife. Clearcut unit size and shape would be designed to maximize natural regeneration and edge effect for wildlife.

Approximately 1,436 acres of commercial timber within big game winter ranges would be closed to logging activity from November 15 to April 30. If the logging unit would be within the 2,662 acres of commercial conifer in big game parturition habitats, the area would be closed to timber harvest activities from May 1 through June 30. From February 1 to July 31, there would be no logging activity on 22 acres within sage grouse nesting sites and raptor nests (see Minerals Management). Exceptions may be approved if conditions described in Appendix 7-1 apply.

A 500-foot buffer from live water, floodplains, and/or riparian/wetland areas would be applied to surface disturbing activities (e.g., roads), unless impacts to soils, watershed, water quality, and fisheries can be mitigated. No surface disturbance would be allowed within 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages, without an approved plan to mitigate impacts to water quality. Linear crossings would be considered on a case-by-case basis (see Watershed section).

Logging operations on slopes steeper than 45 percent would be limited to technologically, environmentally, and economically acceptable methods such as cable yarding and/or horse skidding.

Slash disposal would be tailored to the individual harvest unit to promote reforestation, minimize erosion, and allow big game movement. Methods that would be employed include broadcast burning, piling and burning, lopping and scattering, chipping, and roller chopping.

Stand replacement of harvested areas or areas denuded by natural causes would be revegetated with tree seedlings within prescribed time periods of 5 to 15 years (fully stocked).

Commercial conifer stands would be managed under the guidelines for suppression of wildfires. Aspen and juniper stands would be available for prescribed fire activities to enhance watershed and wildlife values.

Habitat fragmentation would be prevented if it is determined to have a negative ecological affect. Special management areas (old growth, scientific research areas) would be identified and appropriate management incorporated into activity plans. Long-term stand structure development would be an integral part of all forest management.

Woodland forests consist of juniper, aspen, and limber pine (127,977 acres).

Woodland forest would be managed using silvicultural practices that promote stand viability. Treatments could include thinning, harvesting, chaining, and burning. The vegetative material resulting from these treatments would normally be sold as public demand sales.

Woodland forest acreage would be maintained and no treatment would be implemented that converts the areas to another vegetation type. Old aspen stands may be replaced by stands of sprouting aspen by various treatment (e.g., burning, etc.), or old decadent trees may be left standing or downed to provide cover or other habitat for wildlife (e.g., Animal Inn). Silvicultural treatments in mature timber stands would be designed to improve wildlife habitat and watershed condition, i.e., create small openings to provide forage for wildlife and accumulate snow drifts to increase moisture. Tree seedlings would be re-established within these openings. Cottonwood trees would not be available for any harvesting. Firewood cutting for camping purposes would be limited to designated areas.

See other resource management prescriptions in this document for other restrictions that may apply to forest resource management activities.

Hazardous Materials and Other Hazards

Management Objectives: The objectives for management of hazardous materials and waste would be to: 1) protect public and environmental health and safety on BLM-administered public lands, 2) comply with applicable federal and state laws, 3) prevent waste contamination due to any BLM-authorized actions, 4) minimize federal exposure to the liabilities associated with waste management on public lands, and 5) integrate hazardous materials and waste management policies and controls into all BLM programs.

Management Actions: For BLM-authorized activities that involve hazardous materials or their use, precautionary measures would be used to guard against releases or spills into the environment. If safety hazards are identified as a result of hazardous waste spills on BLM-administered public lands, the BLM would provide appropriate warnings.

Sale or transfer of public lands on which storage or disposal of hazardous substances has been known to occur would require public notification of the type and quantity of these substances.

BLM-administered public land sites contaminated with hazardous wastes would be reported, secured, and cleaned up according to applicable federal and state regulations and contingency plans. Parties responsible for contamination would be liable for cleanup and resource damage costs, as prescribed in federal and state regulations.

Certain wastes generated by the oil and gas industry are exempt from regulation as hazardous wastes. These exemptions are too complex in detail to be listed here but are on file in BLM offices. Pits containing produced water or drilling fluids at well sites or other locations would be tested for TCLP constituents if nonexempt, hazardous wastes are indicated. Costs for testing and proper disposal would be borne by the operator if analysis confirms the presence of a nonexempt waste.

See other resource management prescriptions in this document for other restrictions that may apply to hazardous materials management activities.

Lands and Realty Management

Management Objectives: The objectives for the management of the land and realty program would be to manage the public lands to support the goals and objectives of other resource programs, to respond to public demand for land use authorizations, and to acquire administrative and public access where necessary.

Management Actions: The lands and realty management actions are divided into five groups.

Land Ownership Adjustment

Public lands would be retained in federal ownership with the exception of those lands, which have future potential for disposal. Lands currently identified for disposal are described in Appendix 8-1 (24,528 acres) (see Map 7). All disposals must conform to the criteria listed in Appendix 8-2. The disposal of these lands and any lands identified in the future must allow for the acquisition of important resource lands or meet other important public objectives such as community expansion and economic development. Public lands may have further potential for disposal because they are isolated and would be difficult to manage. The preferred method of disposal would be by land exchanges. Other lands would be considered for disposal on a case-by-case basis.

Lands would be provided for solid waste disposal to government entities through sale or exchange. Government entities would be encouraged to purchase unused portions of sanitary landfills currently authorized under Recreation and Public Purposes leases. The BLM would aid in finding suitable landfill sites on public land for purchase or exchange (see the Hazardous Materials Management section). Any site found to contain hazardous waste would be closed and monitored in accordance with appropriate Wyoming DEQ guidelines.

Sweetwater County School District No. 1 would be given the opportunity to acquire Lots 3,4,5, Section 28, T. 19 N., R. 105 W. (124 acres) for school purposes prior to any other type of disposal.

Appendix 8-3 describes proposed acquisitions (about 28,000 acres) that could be made by purchase/exchange or through cooperative agreement to support resource needs. State lands have been identified for acquisition through exchange to protect resource values (Appendix 8-3). Lands would include private/State lands along upper stream reaches of the Big Sandy River; State inholdings in WSAs; other lands with important resource values. Consideration would be given for exchanges for state lands in special management areas such as ACECs. In those instances where a purchase or exchange would not be feasible, attempts would be made to enter into cooperative agreements to protect cultural/historical sites; threatened and endangered species habitat; and riparian habitat.

Unauthorized uses within the planning area would be resolved. If circumstances warrant the issuance of a permit, lease, or right-of-way authorizing the use could occur as a means of resolving trespass. Disposal of the parcel through sale or exchange may be considered to resolve long-standing trespasses.

Utility/Transportation Systems

Public lands would be made available throughout the planning area for rights-of-way, permits, and leases. The planning area, with the exception of defined exclusion and avoidance areas, would be open to the consideration of granting of rights-of-way (reference ACEC and other special management area alternatives (Table 2-4). Right-of-way corridors would not be designated due to the predominate checkerboard private land pattern in the planning unit.

Rights-of-way and avoidance areas are described in Table 2-4 and shown on Map 8 and Map 9. An avoidance area for major utility lines would be located along I-80 between Point of Rocks and Green River. Due to topography, congestion in the concentration area, and surface mining, this area would be restricted to local distribution service lines. All other utilities would be located, if possible, in the northern or southern east-west windows.

Areas designated as utility windows, rights-of-way concentration areas, and existing communication sites would be preferred locations for future grants (Map 10).

Windows ½ mile in width have been identified for the placement of utilities. The northern east-west window would be for underground facilities only, and the southern east-west windows would be for both above and below ground facilities. A ½ mile wide north-south window on the west side of Flaming Gorge, a window south along Highway 430, and a north-south window along the east side of Flaming Gorge have been identified for above and below ground utilities.

The ROD and *Federal Register* notice for the RMP would meet the criteria for public notification for linear or site rights-of-way within floodplains as required by BLM Manual 7221, except for those associated with perennial streams. The BLM would solicit public comment on site facilities or major linear rights-of-way along perennial streams unless another agency (federal, state, or local) already had solicited such comments.

The Aspen Mountain Communications Site Plan would govern development of sites at this location. Sites at other locations would be approved on a case-by-case basis. Sharing of sites would be advocated, where possible.

Withdrawals/Classifications

Withdrawals and classifications would be processed to afford protection to important resource values (Table 2-5). Withdrawals which no longer serve the purpose for which they were established would be revoked (Map 11 and Map 12). Prior to revocation, withdrawn lands would be reviewed to determine if any other resource values require withdrawal protection (Table 2-6).

The Multiple Use Management Classification as it affects public lands in the planning area (200 acres) would be revoked.

An additional 63 acres inundated by water under Flaming Gorge Reservoir would be withdrawn for the Bureau of Reclamation.

Public Water Reserves would be terminated where no longer needed, and acquired where the need exists (21,368 acres canceled and 9,386 acquired acres) (Map 12).

Desert Land Entries

If an applicant can provide evidence of a water right and provide an acceptable conservation plan which protects the soil resource and prevents salinity, the application for either a desert land entry or for an agricultural lease would be considered on its merits. Otherwise, all public lands in the planning area would be considered unsuitable for and closed to agricultural use under Desert Land Entry (DLE) and agricultural leases would be managed to reduce the salinity and sedimentation of the Green River Basin. Desert Land Entries and agricultural leases must meet the criteria outlined in Appendix 8-2).

Access

Access to public lands would be provided throughout the planning area. Access would be closed, or restricted, where necessary, in specific areas, to protect public health and safety, and to protect significant resource values in accordance with ORV proposed designations (see ORV Management discussion). Easements would be acquired to provide access to public lands for recreational, wildlife, range, cultural/historical, mineral, ACEC, special management area, and other resource needs (about 300 acres) (Table 2-7 and Map 13).

See other resource management prescriptions in this document for other restrictions that may apply to lands and realty management activities.

Livestock Grazing Management

Management Objectives: The objectives for livestock grazing management would be: 1) to improve forage production and ecological conditions for the benefit of livestock use, wildlife habitat, watershed, and riparian areas; 2) to maintain, improve, or restore riparian habitat to enhance forage conditions, wildlife habitat, and stream quality; and 3) to achieve proper functioning condition or better on 75 percent of riparian areas. This would be the first priority for vegetation management.

Management Actions: Authorized grazing use would not exceed the recognized permitted active AUMs (318,647 AUMs). Public lands would be made available for livestock grazing while considering the needs of other resources.

The present kind and season of use would continue to be licensed. Permitting for livestock grazing would continue until monitoring, negotiation, or a change in resource conditions indicate that a modification is needed. Monitoring would be continued or initiated following adjustments in grazing use to assure that grazing and other management objectives are being met. Livestock grazing would be managed on 31 I category allotments, 18 M category, and 29 C category Allotments (Appendix 9-1), and one allotment would not be categorized.

Interdisciplinary monitoring studies would be conducted at a level sufficient to detect changes in grazing use, trend, and range conditions and to determine if vegetation objectives would be met for all affected uses (livestock grazing, wild horses, wildlife, etc.).

Livestock grazing would not be authorized in the Palmer Draw area (970 acres) and special management exclosures. AUMs currently authorized in these areas would be suspended. All developed and some semi-developed recreation areas would be closed to livestock grazing and would be fenced to reduce conflicts between uses.

Authorized grazing preference may be reduced in areas with excessive soil erosion and poor range condition, if allotment evaluation warrants such a change or to provide forage for wildlife, wild horse, and recreational use.

Management would be implemented in "I" category allotments to maintain or improve wild horse, wildlife, watershed, vegetation, and soils values. Management in "M" category allotments would be directed toward maintenance of these values.

New AMPs would be written and implemented for some I category allotments, and existing AMPs for I category allotments would be modified as needed. All new and existing AMPs would incorporate desired plant community objectives and riparian objectives where such resources exist. Grazing systems would be designed to maintain or improve plant diversity and would be implemented on all I category allotments. Existing AMPs for M category allotments would not be modified unless monitoring and evaluation indicate a change in management is needed or riparian objectives are necessary. Riparian objectives would also be developed for C category allotments where riparian values exist.

Management actions identified in the Rangeland Program Summary Update (1990) would continue to be implemented.

Site specific analyses would be conducted where necessary to alleviate conflicts between wildlife use, livestock grazing, and development activities. Such a site specific plan, that considers wildlife needs, would be developed for the Pine Canyon, Long Canyon, Cedar Canyon, and Table Mountain area to alleviate conflicts between oil and gas production and exploration, wildlife needs, and livestock grazing.

Cooperative allotment management plans prepared in coordination with other agencies, such as the Forest Service and Soil Conservation Service, would be consistent with this land use plan.

The current authorized active livestock use and existing forage reservations for wildlife and wild horses would be maintained. Existing rangeland monitoring would continue and additional rangeland monitoring would be initiated to determine any need for forage allocation adjustment.

Unallotted forage on public land (15,100 acres) scattered throughout the planning area would be allocated on a case-by-case basis to livestock grazing, wildlife, wild horses, and for watershed resources. The number of AUMs to be allocated would be determined after the lands have been evaluated. Forage increases would be evaluated in a site specific analysis and considered for allocation on a case-by-case basis.

Salt blocks for livestock would not be placed within 500 feet of live water, wetlands, or riparian areas unless analysis shows that watershed, riparian, and wildlife objectives could be met. Salt blocks would not be placed on areas inhabited by special status plant species or other sensitive areas.

New range improvements would be implemented in "I" and "M" category allotments (Map C). Maintenance of new and existing range improvements would be required in accordance with the BLM Rangeland Improvement Policy. Range improvements would be directed at resolving or reducing resource concerns, improvement of wetland/riparian areas, and overall improvement of vegetation/ground cover (see Vegetation section).

Water sources would be developed in crucial wildlife winter ranges only when consistent with wildlife habitat needs. Such sources would be designed to benefit livestock and wildlife. Alternative water supplies or facilities for livestock may be provided to relieve livestock grazing pressure along stream bottoms and improve livestock distribution.

Construction of fences would be considered to meet management objectives. Fence construction in big game use areas and known migration routes would require site specific analysis. Introduction of herder control would be encouraged as an alternative to fencing. All constructed fences would follow construction standards and design (BLM Manual 1740) and would be located and designed to not impede wild horse movement. Fences on public lands would be removed, modified, or reconstructed if documented wildlife or wild horse conflicts occur.

Combining and splitting allotments would be considered when such action would help meet RMP objectives for example. The Henrys Fork allotment would be split into 3 allotments and managed by the guidelines of revised AMPs. The Cottonwood Creek and

Antelope Wash allotments would be consolidated into one two-pasture allotment and managed by the guidelines of a new AMP.

Requests for conversions of livestock kind and changes in authorized season of use would be considered on a case-by-case basis with an environmental analysis. Such changes would be consistent with wildlife, wild horse, watershed, and riparian objectives. Special status plant species and vegetation objectives would be considered before allowing livestock conversions, and all conversions would be consistent with available forage.

Noxious weed infestations would be controlled through livestock management or by environmentally acceptable mechanical, chemical, or biological means in cooperation with County weed and pest districts (Appendix 9-2).

Stock driveway withdrawals numbers 4, 21, and 23 would be revoked.

See other resource management prescriptions in this document for other restrictions that may apply to livestock grazing management activities.

Minerals Management

Management Objective: The objective for management of the minerals program would be to maintain or enhance opportunities for mineral exploration and development, while protecting other resource values. Appendix 5-1 explains environmental analysis and mitigation for oil and gas development and other surface disturbing activities.

Leasable Minerals

Public lands within the checkerboard are open to mineral development with appropriate mitigation measures to promote mineral resource recovery.

Nondiscretionary closures to leasing (that this plan does not address) include incorporated cities and towns and wilderness study areas (see Map 14 and Chapter 3).

Fluids

Management Objective: The objective for management of oil and gas resources would be to provide for leasing, exploration, and development of oil and gas, while protecting other values.

Management Actions: Lands not specifically closed would remain open for oil and gas leasing consideration. Table 2-8 lists lands in the planning area with oil and gas lease restrictions necessary to protect other resource values. Discretionary no leasing areas would include certain parts of the Red Creek ACEC, and portions of the Wind River Front.

The remainder of the planning area would be open to consideration for oil and gas leasing with restrictions that would apply to certain areas. Table 2-8 provides information on which restrictions apply to particular areas and resources. This table provides the guidelines for all surface disturbing activities, not just those related to oil and gas.

Where maximum protection of resources is necessary, a No Surface Occupancy requirement would be established. Areas identified as needing this level of protection are included on Table 2-8 and Map 15. Additional areas may be identified through site specific activity planning. Any modifications to this requirement would require further public input.

Timing limitations (seasonal restrictions) would be applied when activities occur during crucial periods or would adversely affect crucial or sensitive resources. Such resources include, but are not limited to, soils during wet and muddy periods, crucial wildlife ranges, and raptor nesting areas (Table 2-9). Exception to seasonal restrictions may be granted provided the criteria in Appendix 7-1.

Where controlled use or restrictions on specific activities are needed but would not necessarily exclude activities, controlled surface use or surface disturbance restrictions would be designed to protect those resources. These restrictions would be placed on areas where resources could be avoided or mitigated (Table 2-8).

Development actions would be analyzed on a case-by-case basis where necessary to meet RMP objectives, provide for resource protection, and provide for logical development. Limitations on the amount, sequence, timing, or level of development may occur. This may result in transportation planning and in a limitation in the number of roads and pads, or some areas may not be developed until other areas have been restored to previous uses (Appendix 5-2).

Map 14, Map 15, Map 16, Map 17, Map 18, and Map 19 show those portions of the planning area where no leasing would be applied and areas where occupancy and activities would be limited.

Prior to leasing areas surrounding local communities or identified occupied dwellings, consultation with local communities and the counties would occur. Direction to protect public health and safety would be provided. Unleased areas may be offered for lease with a NSO stipulation or, if the interior areas are too large, may not be leased. These NSO areas may only be accessed through directional drilling. The NSO stipulation would be used to facilitate drainage, under the assumption that industry is the best judge of whether technology would enable them to access the oil and gas resources under the terms of the lease. Leases may also be issued with other appropriate mitigation necessary to protect public health and safety and allow for urban expansion.

Leasing with an NSO stipulation could become necessary for several reasons. First, the area is characterized by occupied dwellings and the potential for additional urban expansion; second, the area is surrounded by the scenic steep slopes of White Mountain, Wilkins Peak, and other similar topographic features. Any disturbance in the expanding urban areas or on the steep slopes, can affect the potential for expansion, public health and safety, watershed values, and the scenic resources. Likelihood of success in producing gas varies from low to high, which means that some development would be likely to occur and production facilities would be necessary and year-round access could be required. Any requests for relief from these guidelines would require a plan amendment. The plan amendment would generally be initiated in conjunction with an environmental analysis on the action being considered.

The areas closed to oil and gas leasing would remain closed to leasing of oil and gas unless drainage results in a loss of Federal minerals through production on enclosed private or State lands. At that time, the no lease prescription and other alternatives would be re-evaluated.

Geothermal

Management Objective: Although no geothermal resources are known within the planning area, the resource management objective would be to maintain opportunities for geothermal exploration and development.

Management Actions: Geothermal resources are available for leasing in areas that are open to oil and gas leasing. Areas closed to oil and gas leasing are also closed to geothermal leasing.

Exploration and development of geothermal resources are subject to application of restrictions on surface-disturbing activities and other restrictions in the same manner as they are applied to oil and gas exploration and development activities.

Solid Leasables (Coal)

The Federal coal management options for the Proposed Plan were derived through comparing the coal screening process applications and the impact analyses of the No Action Alternative and Alternatives B and C. Since evaluation of the alternatives and selection of the Preferred Option (Alternative), the Beans Springs Preference Right Lease Applications have been relinquished; thus impacts as projected to other resources in the Beans Spring area would be significantly reduced. Other coal development projections have been set back or put on hold and these would also reduce or lessen impacts to the other resources throughout the active coal mining areas. Our projections, however, are valid as an analysis of the level of activity that would provide the best mix and balance with the other land and resource uses in the planning area. Although current coal activity is in a downward trend, this trend could, and most likely will reverse over the time frames analyzed in the plan. Because of this we have not changed our projected mining activity scenarios.

The effect of the coal screening process on development of the Proposed Plan was that coal areas determined to be unsuitable or unacceptable for further leasing consideration in the analysis for Alternatives B and C were dropped from further consideration and were not carried forward into the Proposed Plan. See Appendix 3-2 for a complete explanation of how the coal screening process was conducted and how the coal screening results were applied for each alternative in this RMP EIS.

Management Objective: The objective for management of the federal coal resources in the planning area would be to provide for both short and long-range development of federal coal, in an orderly and timely manner, consistent with the policies of the federal coal management program, environmental integrity, national energy needs, and related demands.

Management Actions: With appropriate limitations and mitigation requirements for the protection of other resource values, all BLM-administered public lands and Federal coal lands in the Green River planning area, except for those identified in Table 2-10, would be open to coal resource inventory and exploration to help identify coal resources and their development potential.

About 422,000 acres of federal coal lands within the Coal Occurrence and Development Potential area (see Map 3) would be open to further consideration for coal leasing and development (i.e., new competitive leasing, emergency leasing, lease modifications, and exchange proposals, under the Federal Coal Management Program) with appropriate and necessary conditions and requirements for protection of other land and resource values and uses (Table 2-11).

These 422,000 acres would be subject to continued field investigations, studies and evaluations to determine if certain methods of coal mining can occur without having a significant long-term impact on wildlife, cultural, and watershed resources, in general, and on threatened and endangered plant and animal species and their essential habitats. Such investigations, studies and evaluations may be conducted on an as-needed or case-by-case basis in reviewing individual coal leasing or development proposals (e.g., mine plans) or, if opportunities or needs arise, area-wide studies may be conducted. These studies would include keeping resource base data current (e.g., where existing raptor nests become abandoned or where new raptor nests become established), analysis of effects to wildlife and threatened and endangered species habitats and populations, and the cumulative effects of mining operations and other activities in the area. Consultation with other agencies (e.g., USFWS, WGFD, etc.), special interest groups, and with industry would occur as needed or required.

The North Fork Vermillion Creek drainage and the City of Rock Springs Expansion Area would be closed to further consideration for Federal coal leasing and development (see Appendix 3-2).

Big game crucial winter ranges and birthing areas would be open to further consideration for federal coal leasing and development with a provision for maintaining a balance between coal leasing and development, and adequate crucial winter range and birthing area habitats to prevent significant adverse impacts to important big game species. This would be accomplished through controlled timing and sequencing of Federal coal leasing and development in these areas. For example: Satisfactory abandonment and adequate reclamation of mined lands in big game crucial winter ranges and birthing areas would be required before additional Federal coal leasing and development would be initiated in the same crucial winter ranges and birthing areas.

The greater Cooper Ridge and Elk Butte areas (about 25,368 acres) would be open to further consideration for Federal coal leasing and development, pending further study. This study is for the purpose of defining the extent of any deer and antelope crucial winter range in the area, and for determining if certain methods of coal mining can occur in the area without having a significant long-term impact on the deer and antelope herds.

For the protection of important petroglyph sites, other important cultural resource values, and important geologic and ecologic features, about 13,340 acres of Federal coal lands would be open to further consideration for leasing and development for subsurface mining methods only (refer to the Natural Corrals, Cedar Canyon, Greater Sand Dunes, and Steamboat Mountain portions of the Special Management Area section for more details). Any Federal coal leasing and development on these lands would include a no surface occupancy requirement for any related ancillary facilities. These same lands would be closed to surface mining methods and any related surface disturbing activities.

In general, cultural sites on Federal coal lands would be managed as avoidance areas for surface disturbing activities. As avoidance areas, cultural sites would be open to consideration for coal leasing and development. Surface disturbing activities associated with such actions as surface coal mining methods, exploration drilling, construction and location of ancillary facilities, roads and other types of rights-of-way, etc., would be avoided in these areas, if possible. In cases where it is not possible to avoid these areas, intensive mitigation of the surface disturbing activities (primarily excavation and other data recovery measures) would be emphasized. If necessary, appropriate buffer zones would be established to protect sites that are listed or eligible for listing on the NRHP. Data recovery measures would be implemented in the context of an NRHP district, if appropriate, to maximize efficiency of data recovery efforts.

Grouse nesting areas (sage or sharptail grouse) would be open to consideration for Federal coal leasing. Exploration activities and ancillary facilities would be allowed with the following requirement:

> If an occupied grouse nest that would be adversely affected by coal mining and related surface disturbing activities is identified, surface uses and activities would be delayed in the area of influence for the nest until nesting is completed.

Active grouse leks (sage and sharptail grouse) and the area within a ¼ mile radius of active leks would be managed as avoidance areas

for surface disturbing activities and would be open to consideration for Federal coal leasing and development with the following requirements:

> Surface disturbing activities associated with such actions as surface coal mining methods, exploration drilling, construction of roads and other types of rights-of-way, etc., would be avoided in these areas, if possible. In cases where it is not possible to avoid these areas, intensive mitigation of the surface disturbing activities would be emphasized.
>
> Permanent and high profile structures, such as buildings, overhead powerlines, other types of ancillary facilities, etc., would be prohibited in these areas.
>
> During the grouse mating season, surface uses and activities would be prohibited between the hours of 6:00 p.m. and 9:00 a.m., within a ½ mile radius of active leks (i.e., those leks occupied by mating birds).

Wetland and riparian areas on Federal coal lands (about 2,000 acres) would be managed as avoidance areas for surface disturbing activities and would be open to consideration for coal leasing and development with the following requirements:

> Surface disturbing activities associated with such actions as surface coal mining methods, exploration drilling, construction of ancillary facilities, roads and other types of rights-of-way, etc., would be avoided in these areas, if possible. In cases where it is not possible to avoid these areas, intensive mitigation of the surface disturbing activities would be emphasized.

Areas of BLM-Administered Public Land Surface Overlying State-Owned Coal. About 28,000 acres of BLM-administered public land surface overlying state-owned coal would be open to further consideration for coal development with appropriate and necessary conditions and requirements for protection of the public land surface and surface resource values and uses, including big game crucial winter range, grouse leks, cultural values, geologic features, rights-of-way, and City of Rock Springs expansion area.

About 25,000 acres would be subject to continued field investigations, studies, and evaluations to determine if certain methods of coal mining can occur without having a significant long-term impact on wildlife, in general, and on threatened and endangered plant and animal species and their essential habitats. Such investigations, studies and evaluations may be conducted on an as-needed or case-by-case basis in reviewing individual coal leasing and development proposals by the state or, if opportunities or needs arise, area-wide studies may be conducted. These studies would include keeping resource base data current (e.g., where existing raptor nests become abandoned or where new raptor nests become established), analysis of effects to wildlife and threatened and endangered species habitats and populations, and the cumulative effects of mining operations and other activities in the area. Consultation with other agencies (e.g., USFWS, WGFD, etc.), special interest groups, and with industry would occur as needed or required.

About 3,000 of these acres would be closed for surface mining activities to protect cultural and geologic values. These would be no surface occupancy and very limited surface occupancy areas.

Preference Right (Coal) Lease Applications (PRLAs). The Beans Spring coal PRLA has been canceled. Processing of competitive lease applications in the Beans Spring area would be considered, with special attention given to those sensitive value areas identified through the coal screening process. These lands would thus be managed the same as the Federal coal lands immediately surrounding them.

Solid Leasables (Sodium/Trona)

Management Objective: The objective for management of the federal sodium (trona) resource would be to provide for both short- and long-range development of federal sodium (trona) in an orderly and timely manner.

Management Actions: The known sodium leasing area (Map 3) would remain open to exploration and consideration for leasing and development, but would be closed to prospecting permits. The remainder of the planning area would be open to sodium prospecting except for areas closed to mineral leasing, surface mining, or mechanical prospecting type activities (areas closed to drilling, off-road vehicle use, and explosive charges) (Table 2-10). Leasing would be considered on a case-by-case basis, subject to the resource management prescriptions applied to oil and gas and coal, and the management direction applied in this plan.

Other Leasables

Management Objective: The objective for management of other leasables is to provide for leasing, exploration, and development.

Management Actions: Leasing would be considered on a case-by-case basis and subject to appropriate mitigation.

Mineral Materials

Management Objective: The objective for management of salable minerals would be to provide mineral materials in convenient locations for users while protecting other resources.

Management Actions: Sale areas and community pits would be established in conformance with other resource objectives. Adequate mine and reclamation plans for both new and existing use areas would be developed. Requests from users for mineral material disposals would be evaluated on a case-by-case basis.

Sales and free use of mineral materials from established sites would be allowed. Proposed sales from new use areas would be evaluated on a case-by-case basis.

Localized common use areas would provide for sales of moss rock and sand. No topsoil sale areas would be established.

Table 2-12 shows the areas that would be closed to mineral material sales.

Locatable Minerals

Management Objective: The objective for management of locatable minerals would be to provide opportunities to explore, locate, and develop mining claims while protecting other resource values.

Management Actions: With the exception of lands withdrawn from mineral location, the planning area would be open to mineral exploration, location, and development. The existing mineral classification withdrawals (phosphate, coal, oil shale) would be revoked (Table 2-6). Table 2-5 lists proposed withdrawals.

Surface-disturbing activities on mining claims require a notice submitted to BLM for a cumulative surface disturbance of 5 acres or less and a plan of operations for disturbances of more than 5 acres. In designated ACECs, WSAs, potential additions to the Wild and Scenic River System, and areas closed to ORVs, a plan of operations would be required for any surface disturbance activities, regardless of acreage involved.

Geophysical

Management Objectives: The objective for management of geophysical activity would be to provide opportunity for exploration of mineral resources and collection of geophysical data, while protecting other resource values.

Management Actions: Most of the planning area would be open for consideration of geophysical activities. Table 2-13 shows areas that would be closed to the use of geophysical vehicles and explosive charges to protect sensitive resources.

Geophysical activities would follow the guidelines of ORV management prescriptions (see Off-Road Vehicle Management). However, geophysical exploration has been and would continue to be routinely granted site specific authorization for off-road vehicle use subject to appropriate limitations to protect various resources identified during analysis. Geophysical Notices of Intent would continue to be evaluated on a case-by-case basis, and all authorizations would be issued with appropriate analysis and mitigation requirements (see Appendix 5-1).

Geophysical activities would be limited within ¼ mile or visual horizon of historic trails (whichever is closer) to protect trail integrity. Generally, shotholes and vibroseis activity would be restricted or disallowed within 300 feet of historic and recreational trails based on a site specific analysis.

Geophysical travel through developed and semi-developed recreation sites would be restricted to existing roads and trails.

Geophysical exploration on the potential wild sections of the Sweetwater River under Wild and Scenic River consideration would be limited to foot access and placement of surface cables. No off-road vehicles would be allowed. Surface charges may be allowed if a site specific analysis determines no adverse impacts would occur to river values.

See other resource management prescriptions in this document for other restrictions that may apply to minerals management activities.

Off-Road Vehicle Management

Management Objective: The objectives for off-road vehicle (ORV) management would be to provide opportunities for off-road vehicle use in conformance with other resource objectives.

Management Actions: Off-road vehicle use would be managed according to the ORV designations (Table 2-14 and Map 20). Areas for ORV rallies, cross-country races, and outings would be provided on a permit basis. Approximately 170,000 acres would be closed to off-road vehicle use to protect naturalness and outstanding opportunities for solitude, or primitive and unconfined recreation.

Off-road vehicles in areas designated as "limited" for off-road vehicles must stay on designated or existing roads and trails unless allowed as an exception by the authorized officer. This limitation applies to all activities.

Travel in wildlife crucial habitats (strutting grounds, spawning beds, big game ranges, calving/fawning periods, etc.) (Table 2-14) would be restricted seasonally as necessary (about 1,500,000 acres).

Travel would be restricted to certain designated roads in sensitive watersheds and on cultural sites.

Generally, over-the-snow vehicle use would be subject to the prescriptions described in Table 2-14 unless a site specific analysis determines otherwise.

An ORV implementation plan would be prepared to replace the two existing ORV plans and would reflect the ORV designations made in this plan. Except for areas that would be closed to off-road vehicle travel, some types of motor vehicle use may be allowed by the authorized officer provided resource damage did not occur.

ORV management prescriptions would apply to the use of vehicles for geophysical and other operations (see Geophysical).

See other resource management prescriptions in this document for other restrictions that may apply to off-road vehicle management activities.

Recreation Resource Management

Management Objectives: The objectives for recreation management would be to ensure the continued availability of outdoor recreational opportunities sought by the qpublic in accordance with the Recreation Opportunity Spectrum (Map 21), while protecting other resources. Other objectives would be to meet legal requirements for the health and safety of visitors and to mitigate conflicts between recreation and other types of resource uses.

Management Actions: Most public lands in the planning area would be open and available for consideration to all individual, commercial, and competitive outdoor recreation uses. Existing developed sites would be managed for public health and safety. Undeveloped areas would be managed to give first consideration to air quality, cultural resources, watershed, wildlife values, and public health and safety.

A 14-day camping limit on all public lands would be maintained. Camping would be limited to 14 days within a 28-day consecutive period. After the 14th day of occupation, campers must move outside a 5-mile radius of the previous location. Camping would not be allowed on posted waters or within 200 feet of springs, seeps, and ponds to protect water quality and wildlife and livestock watering areas. Camping in other riparian areas would be allowed, within 200 feet from water. Areas would be closed if resource damage occurs.

Special recreation permits would be considered on a case-by-case basis. Necessary mitigation would be required for special recreation permits, commercial recreation uses, and major competitive recreation events to provide resource protection and public safety.

Suitable wild horse herd viewing area(s) would be developed to enhance public viewing of horses. Short-term intrusions (within ½ mile) and actions that would blend with the landscape or would benefit the intent of the wild horse herd viewing area would be considered in these areas. The viewing area and ½ mile surrounding area would be closed to intrusions and surface disturbing activities (e.g. structures, mineral activities, powerlines, roads, etc.) that could interfere with opportunities to view horses.

Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, Leucite Hills, Red Creek, Pine Mountain, Little Mountain, and Cedar Canyon areas would be managed to assure their continuing value for recreational opportunities (Map 22). Recreation area management plans would be prepared for these areas if necessary.

The Continental Divide National Scenic Trail, Continental Divide Snowmobile Trail, the Green River, and Wind River Front (about 265,188 acres and 24 miles of trails) would be managed as special recreation management areas to focus management on areas with high recreation values or areas where there are conflicts between recreation and other uses. The existing special recreation management areas (Killpecker Sand Dunes and Oregon and Mormon Pioneer National Historic Trails) would be retained (Map 23). The existing management plan for the Oregon and Mormon Pioneer

Trails would be implemented. Management plans for the Green River, Wind River Front, the Sand Dunes, and the Continental Divide National Scenic Trail and Snowmobile Trail would be developed. The remainder of the planning area would be managed as an extensive recreation management area.

Recreation project plans and an interpretive prospectus would be developed for the 14-Mile recreation site, Sweetwater Campgrounds, Boars Tusk, Leucite Hills, and the Continental Divide Snowmobile Trail. No development activities, such as those associated with mineral development, pipelines, powerlines, or well pads, would be allowed on the 14-Mile recreation area. The public water reserve and the recreational withdrawal which closes the area to mineral location and disposal would be retained. The 14-Mile recreation site would be open to activities such as recreation site facilities.

The integrity of the Continental Divide Snowmobile Trail would be maintained to allow for continued snowmachine use, by limiting surface-disturbing activities, structures, or facilities that would block or hinder trail use on or within ¼ mile of the trail (2,330 acres). The only exceptions would be facilities that support the visitors use and experience along the trail or to protect the health and safety of the user. The existing trail system would be expanded by adding loop trails.

Mountain bike trail opportunities would be explored. Partnerships with local citizens and Chambers of Commerce, Forest Service, and the State of Wyoming would be pursued. Specific areas would include the Little Mountain-Firehole Canyon-Flaming Gorge area and the Wyoming Continental Divide Snowmobile Trail. Trails would be signed, and brochures would be developed. Other trails would be developed on a case-by-case basis. An implementation plan would consider mountain bike and other mechanized vehicle needs.

The Green River, Sweetwater River, Big Sandy River, and Bitter Creek between the towns of Rock Springs and Green River would be managed for recreation values, and recreation area management plans would be developed, where necessary. The establishment of a "greenbelt" along the Green River from Fontenelle Dam to Flaming Gorge Reservoir (approximately 3,200 acres) would be supported.

About 1.5 miles of the Big Sandy River adjacent to the Bridger-Teton Forest boundary would be managed to retain pristine values. Actions would not be allowed that would alter these river values.

Travel routes that meet the criteria for backcountry byways would be designated. Five backcountry byways (Map 22) have been identified and would include consideration for mountain bike use. They are Tri-Territory Loop, the Lander Road, Red Desert, Fort LaClede Loop, and the Firehole-Little Mountain Loop. Brochures and interpretive signs would be prepared to inform users. Additional backcountry byways would be considered on a case-by-case basis.

Cutting of trees and firewood for camping purposes would be limited to designated areas.

Recreation site development projects and access would be managed to maintain or improve wetland habitat conditions along intensively used streams and reservoirs.

Consideration for permanent recreation site facilities in existing use areas would be made provided proper mitigation and exceptions to Executive Order 11988 apply. The area within 500 feet of riparian areas and floodplains would be avoidance areas for new recreation site facilities. Exceptions may be considered following a site specific analysis. Impacts to riparian areas and water quality would not occur. Stream water at undeveloped recreation sites would be monitored. If the water is not potable, signs would be posted.

Vegetation buffer strips would be maintained between developed recreational facilities and surface water.

The natural values of Boars Tusk, Pilot Butte, and Emmons Cone would be protected from surface disturbance and the integrity of the geologic features would be maintained. No surface occupancy would be allowed on Boars Tusk, Pilot Butte, and Emmons Cone, unless activity would enhance management of these features (Table 2-8 and Table 2-4). Interpretive facilities would be allowed.

Surface disturbing activities, such as those associated with mineral development, roads, pipelines, powerlines, etc., on recreation sites would not be allowed within ¼ mile of sites unless activities were determined to be compatible with recreation objectives for the area. Generally such activities would be designed to avoid these areas. An approved plan would be required prior to the site disturbance.

Posting information and directional signs would be necessary in some areas. This alternative establishes various types of resource designations, and sign posting would be provided to promote visitor use of the various areas consistent with management objectives.

A withdrawal from the public land laws, including the mining laws, would be pursued for the Sweetwater Campgrounds.

See other resource management prescriptions in this document for other restrictions that may apply to recreation resource management activities.

Wind River Front Special Recreation Management Area (261,080 acres of BLM-administered public lands)

Management Objectives: The objectives for management of the Wind River Front Special Recreation Management Area (SRMA) would be (1) to provide protection and enhancement of the recreation opportunities, activities, and setting of the area, maintain the high visual values of the area, and to protect air quality in the adjacent Class I airshed; (2) to maintain or enhance biological diversity; (3) to prevent fragmentation of grasslands, shrublands, streams, wetlands, and forest habitats; and (4) to continue to maintain crucial big game habitats and migration corridors so that Wyoming Game and Fish Department population objectives can be met.

Management Actions: The boundary that would be considered the Wind River Front Special Recreation Management Area would be public lands north of Township 27, public lands east of Highway 191, public lands northwest of Highway 28, and public lands south of the Bridger-Teton and Shoshone National Forests.

To facilitate management, the area would be divided into two units, with the boundary following the Continental Divide and with the eastern portion including the Prospect Mountains.

Eastern Portion

This area (approximately 88,510 acres) would be managed to provide protection to the Class I airshed in the Bridger Wilderness, for scenic, watershed, and wildlife values, recreation use, riparian, and vegetation resources.

Major facilities (including linear facilities) would be excluded from the eastern part of the Wind River Front. Small feeder lines could be allowed if analysis indicates that the objectives of the area could be met.

This portion of the SRMA would be closed to mineral leasing. Surface disturbing activities would have to conform to area objectives.

Off-road vehicle (ORV) use would be limited to designated roads and trails, except for about 500 acres associated with the *Arabis pusilla* proposed ACEC, which would remain closed to ORV use.

The 9.7-mile proposed Wild and Scenic Sweetwater River would be managed under interim management guidelines so as to not impair the suitability of the river from inclusion into the National Wild and Scenic River Preservation System. More detailed information on the management of the proposed Wild and Scenic River can be found in the Wild and Scenic River section. The suitable segments of the river would be withdrawn from the public land laws, including the mining laws.

The Sweetwater Bridge and Guard Station Campgrounds would be upgraded to provide for public health and safety, reduce natural resource degradation, and to meet Bureau accessibility standards. The campgrounds would be withdrawn from the public land laws, including the mining laws. Additional withdrawals would be pursued to meet area objectives, if necessary.

The integrity of the Continental Divide Snowmobile Trail, the Continental Divide National Scenic Trail, and the South Pass Cross Country Ski Trail would be maintained by limiting (and in some cases precluding) surface-disturbing activities or facilities on or within ¼ mile of the trails. The only exceptions would be the establishment of facilities to provide services to the users of the trails and to provide for public health and safety.

All activities would conform with the requirements of the Class II visual resource management classification and all management actions would be designed and located to blend into the natural landscape and not be visually apparent to the casual viewer. A transportation plan would be done prior to developments. Long linear facilities would avoid the area.

About 1.5 miles of the Big Sandy River, from the Bridger-Teton National Forest boundary to the boundary of State land, would have a no surface occupancy restriction applied to surface disturbing activities within 1 mile (½ mile of either bank) of the river.

Western Portion

This area (approximately 172,630 acres) would be managed for dispersed recreation uses such as camping, hunting, and fishing, with full consideration given to wildlife, cultural, vegetation, watershed values, and mineral development activity.

This portion of the SRMA would be open to mineral leasing. Daily off-road vehicle use and access may not be feasible for this entire area. Access, particularly proposed roads, may be limited and a road density analysis may be required. To prevent conflicts with recreation users, alternative access may be needed.

Surface disturbing activities would be limited through controlled surface use requirements or closing areas where maximum resource protection is necessary.

Facility placement would be designed for minimum surface disturbance unless a site specific analysis determines that additional activity can occur and SRMA objectives can be met. An exception would be if the operator and surface management agency/individual could arrive at an acceptable mitigation plan for anticipated impacts. Options in the mitigation plans would include consideration of development in one portion of the area coupled with no development in remaining areas. Other considerations would be to place multiple facilities in a specific area (e.g., multiple wells and production facilities on one pad) and require remote control operations (such as remote well head and production facility control) to limit trips into locations.

All activities would conform with the requirements of the Class IV visual resource management classification and all management actions would be designed and located to repeat the basic elements (form, line, color, and texture) inherent in the characteristic landscape. New roads would be designed so they conform with the landform and do not create the "tunnel effect". Off-road vehicle use would be limited to designated roads and trails.

Transportation planning would be done prior to development. Linear facilities need to conform with the transportation plan and follow existing routes and previously disturbed areas.

No surface occupancy for surface disturbing activities would be allowed on 1 mile of the Dry Sandy Swales.

Special Status Species Management

Special Status species are those which are proposed for listing, officially listed (threatened and endangered), or candidates for listing as threatened or endangered by the Secretary of the Interior under the provisions of the Endangered Species Act; those listed or proposed for listing by a state in a category implying potential endangerment or extinction; and those designated by each State Director as sensitive.

Candidate, Sensitive, and Threatened and Endangered Plant Species Management

Management Objectives: The objectives for management of special status plant species would be to 1) maintain or enhance essential and important habitat and prevent destruction or loss of the plant species communities and important habitat; 2) provide opportunities for enhancing or expanding the habitat; and 3) prevent the need for listing these species as threatened or endangered.

Management Actions: Any management actions on potential habitat of special status plant species communities on federal land or non-federal surface with federal minerals would require searches for the plant species prior to project or activity implementation. New special status plant populations would be closed to activities that could adversely affect these species and their habitat. Closed or restricted activities would include limiting off-road vehicle travel to designated roads and trails and limiting fire suppression to use of existing roads and trails.

Locations of special status plant species and essential and/or important habitats would be determined. Known locations of special status plant species communities (see Map 24) would be protected and closed to: 1) surface disturbing activities or any disruptive activity that could adversely affect the plants or their habitat (see the discussion in Lands and Realty Management and Minerals Management for this alternative); 2) the location of new mining claims (withdrawal from mineral location would be pursued); 3) mineral material sales; 4) all off-road vehicles including those used for geophysical exploration activities, surveying, etc.; and 5) the use of explosives and blasting.

Locations of special status plant species would be open to consideration for mineral leasing (see Table 2-8).

A site specific analysis would be prepared for fire activities around special status plant species sites. All fire suppression activities would be limited to existing roads and trails on essential and important special status species habitat.

Activities such as fencing, interpretive signs, or barriers to ensure protection to the special status plant species would be considered for both existing populations and potential habitat.

BLM would attempt to acquire approximately 1,920 acres of additional *Descurania torulosa* habitat on Pine Butte.

The management actions for these species apply only to BLM-administered public lands. Emphasizing management of these species on public lands and preventing these species from being listed as threatened or endangered would benefit all parties within the Green River Resource Area. When species are listed as threatened and endangered, by law they become more universally protected on most lands and avoiding listing would be of mutual benefit to all parties.

As new information about vegetation types and communities is acquired, additional special status plant species may be identified. Should new special status plant species be identified, they would be managed under the same prescriptions as stated above.

Management prescriptions for threatened and endangered species and proposed threatened and endangered species would be managed on a case-by-case basis in consultation with the U.S. Fish and Wildlife Service.

Known locations of special status species would be evaluated on a case-by-case basis to determine if they meet the relevance and importance criteria to be considered for ACEC designation. If appropriate, such locations would be proposed for ACEC designation and the Green River RMP would be amended, as necessary. See the section on Special Designation Management Areas for those areas of known special status plant species locations that are proposed for ACEC designation.

See other resource management prescriptions in this document for other restrictions that may apply to special status plant species management activities.

Vegetation Management

Management Objectives: The objectives for management of vegetation would be to maintain or enhance vegetation community health, composition, and diversity in order to meet watershed, wild horse, and wildlife resource management objectives and provide for plant diversity (desired plant communities) to meet livestock management, watershed, wild horse, and wildlife objectives.

Management Actions: Riparian habitat would be maintained, improved, or restored to enhance forage conditions, provide wildlife habitat, and improve stream quality. Where possible, additional riparian area acreage would be acquired to enhance livestock and riparian area management (see Appendix 8-3).

The minimum goal for riparian area management would be to achieve a proper functioning condition. This would be considered the highest priority for vegetation management. Desired plant communities must meet criteria for proper functioning condition. Guidelines for utilization described in Appendix 9-2 have been established to aid in achieving this goal.

Desired plant community objectives would be established for the planning area if possible when ecological site inventory data becomes available. All activity plans would incorporate desired plant community objectives.

Prescribed fire would generally be the preferred method of vegetation manipulation to convert stands of brush to grasslands and to promote regeneration of aspen stands and/or shrub species. Low intensity burns during periods of high soil moisture would be the preferred methods/times in mountain shrub communities (Appendix 9-2).

Approximately 26,700 acres of vegetative removal would be designed to increase livestock forage, while the remaining 41,000 acres would primarily be designed to improve wildlife habitat. Treatment methods would include mechanical, biological, chemical, and prescribed fire. Prescribed burns may be conducted in crucial big game winter ranges if habitat values would improve for these species. Prescribed fire would be the preferred method of vegetation manipulation, and spring burns would be preferred to regenerate shrubs. Chemical treatment would be used only where national guidelines can be exercised to prevent unwanted destruction of desirable fauna or flora and to prevent transportation of these chemicals to other areas by water or air movement (Appendix 9-2).

Prescribed burns generally would be conducted in areas having greater than 35 percent sagebrush composition, 20 percent desirable grass composition, and greater than 10 inches of precipitation. Other vegetation manipulation methods would be considered on a case-by-case basis depending on objectives and cost benefits. All treated areas would be rested for 2 growing seasons from livestock grazing. Burn areas would be fenced from livestock if necessary. Prescribed fire would be restricted in areas with surface coal.

Vegetation manipulation projects would be conducted to reach multiple use objectives and would involve site specific environmental analysis and coordination. Funds for vegetation manipulation in I category allotments would be provided by the BLM, other state or federal agencies, and private sources.

All vegetation manipulation projects would involve site specific environmental analysis; coordination with affected livestock operators and the WGFD; and would include multiple use objectives for resource uses including livestock, wildlife, and watershed.

All vegetation treatments would be designed on a case-by-case basis and would be irregular in shape for edge effect, cover, and visual esthetics.

Vegetation treatments would be designed to be compatible with special status plant species, i.e., spraying, burning, mechanical disturbances, etc. would not be allowed to adversely affect populations.

Vegetation treatment units would be designed to protect water quality and dissipate erosion. This generally means accomplishing vegetation treatments in a mosaic pattern and leaving sufficient untreated vegetation to buffer riparian areas and intermittent and ephemeral drainages from erosion. Specific treatment designs for erosion control would be determined on a case-by-case basis.

See other resource management prescriptions in this document for other restrictions that may apply to vegetation management activities.

Proper Functioning Condition Guidelines

Riparian habitat in proper functioning condition is the minimum acceptable status or level within the Green River Resource Area. Under this resource management plan, 75 percent of the riparian areas within the area would, within 10 years, have management plans in place that would allow riparian areas to achieve proper functioning condition. The BLM definition of proper functioning condition is found in the Glossary. To achieve this condition, riparian areas would benefit with the implementation of allowable use levels based on a riparian area's classification (i.e., Proper Functioning Condition, Functioning At Risk, Non-Functioning, and Unknown At Present). The Green River Resource Area would use the BLM Technical Reports (TR 1737-9 and TR 1737-11) on Proper Functioning Condition to guide the effort in classifying or rating all lotic and lentic riparian areas in the area based on condition. From this information, use levels would be established on key riparian species to improve riparian plant communities at a rate sufficient to achieve

proper functioning condition. See Appendix 9-2 for more information.

The utilization guidelines would aid in accomplishing hydrologic, vegetative, and deposition factors that are required to meet proper functioning condition.

Utilization standards may change from the guidelines as site specific data are analyzed on season of use, class of livestock, and functional condition. Upper limits could rise if certain conditions, such as season of use, are limited on a riparian area. As an example, a specific riparian area is grazed only in early spring and no livestock grazing is allowed after this period. If this condition could be met, and the higher utilization of key riparian species is not detrimental to the functioning condition, then this standard could be established for a site specific area.

The next step beyond Proper Functioning Condition of riparian areas is the establishment of desired plant communities. Desired plant community objectives would be developed on riparian areas by several different methods, including Ecological Site Inventory, comparison areas (comparison areas would have similar soils, aspect, vegetation, and precipitation), and estimating the structural component that can be achieved in the short term. Desired plant community goals can have short- and long-term goals. Desired plant community goals take into consideration all uses of the riparian area which can include livestock, wildlife, recreation, fisheries, flood control, etc.

While the desired plant community establishes goals for the riparian area or upland plant community, the Desired Future Condition establishes goals for entire watersheds (or larger blocks of land) involving all activities and resources. Achieving Proper Functioning Condition and Desired Plant Community are integral steps in the process of establishing and achieving the Desired Future Condition of an area.

Visual Resource Management

Management Objective: The objective for management of visual resources would be to maintain or improve scenic values, visual quality, and to establish priorities for managing the visual resources in conjunction with other resource values.

Management Actions: Visual resource classes would be retained or modified to enhance other resource objectives such as cultural, recreation, wild horse viewing, and special management areas. The visual resource management classifications would become as shown on Table 2-15 and Map 25.

Projects would be designed to meet the objectives of the established visual classifications and appropriate mitigation applied. Facilities including existing or new wells and facilities, linear rights-of-way, etc., would be screened, painted, or designed to blend with the surrounding landscape.

Management actions on the lands classified as Class II visual resource management lands would be designed to blend into the natural landscape and retain the existing character of the landscape (Appendix 9-2).

Management actions on the lands classified as Class III visual resource management lands would be designed to partially retain the existing character of the landscape.

Management actions on the lands classified as Class IV visual resource management lands could result in a major modification to the existing character of the landscape.

All surface disturbing actions, regardless of the visual resource management class, would be mitigated to reduce visual impacts. This would be achieved by designing and locating the disturbances in a manner that most closely meets the minimum degree of contrast acceptable for the visual resource management class.

Management actions in rehabilitation areas would be designed to reclaim and improve visual resource values to achieve a higher classification (Classes III and IV) (see Map 25 and Table 2-15).

The scenic values along Highway 28 within Fremont County (12.5 miles) would be protected. All proposed lands actions and other activities within view of the highway would be evaluated for impacts and mitigated to protect the scenic value of this historical area; and Class II visual values, where designated, would be retained.

Major highways would be managed under their current visual classifications except for the area along Interstate 80 between Green River and Rock Springs which would be managed consistent with Class III visual resource management classifications (Map 25 and Table 2-15).

Suitable wild horse herd viewing area(s) would be developed to enhance public viewing of horses. Short-term intrusions and actions that would blend with the landscape or would benefit the intent of the wild horse viewing area would be considered. The viewing area would be closed to surface disturbing activities that would interfere or preclude viewing of the horses (such as those associated with mineral development, roads, pipelines, powerlines, structures, etc.) on or within a ½ mile radius of any wild horse viewing area (500 acres) (Table 2-8 and Table 2-4).

All activities that could be viewed from the Fontenelle Reservoir would be designed to be subordinate to the landscape.

See other resource management prescriptions in this document for other restrictions that may apply to visual resource management activities.

Watershed/Soils Management

Management Objectives: The objectives for watershed/soils management would be to stabilize and conserve soils, to increase vegetative production, to maintain or improve surface and groundwater quality, and to protect, maintain, or improve wetlands, floodplains, and riparian areas.

Management Actions: Land uses and surface disturbing activities would be designed to reduce channel erosion, specifically bank erosion, and channel incision that would result in unacceptable losses of riparian habitat, and accelerate surface erosion. Damaged wetland and riparian areas would be restored (Map 26).

Sediment, phosphate, and salinity load would be reduced in the planning area, where possible. Measures listed in Appendix 5-1 would be applied. Guidelines described in the Wyoming Water Quality Rules and Regulations would also be applied (Wyoming 1989).

Channel stability would be improved and maintained, and damaged wetland areas would be restored. Where exclosures are used, exclosures would be designed to allow ample water for livestock and allow minimum impediments to big game migration.

Those areas where the soils are highly erodible or difficult to reclaim would receive increased attention, and would be avoidance areas for surface disturbing activities, where possible. Activities could be allowed if a site specific analysis determines that no adverse impacts would occur to water quality, and soil degradation would not occur. An erosion control plan (such as an ERRP, Appendix 5-3 would be prepared as part of the site specific analysis process (Map D). Rehabilitation plans would be developed and implemented on newly disturbed areas and for existing disturbed sites as needed.

BLM would participate with federal and local government agencies and the Colorado River Salinity Control Forum to develop and implement salinity control plans. Activity plans which include measures to reduce salinity would be completed and implemented. Additionally, activity plans would also be designed with measures to reduce phosphate loading to Fontenelle and Flaming Gorge Reservoirs. BLM would participate with federal and local government agencies to develop and implement phosphate reduction plans in tributaries to Fontenelle Reservoir and Flaming Gorge Reservoir.

Practices would be implemented to reduce sediment loading and protect water quality. These practices would include ensuring construction of stream crossings during normal stream flows, not during high or peak flows when additional sediment from construction could be swept into the stream; and ensuring water discharges meet appropriate standards (Appendix 5-1).

Site specific management plans (to reduce erosion and sediment yield, promote ground cover, enhance water quality) would be prepared for areas where needed, including Cedar Mountain and Sage Creek/Currant Creek. The Red Creek watershed plan would continue to be implemented.

Existing HMPs would be updated to include watershed management directives.

Sediment reduction and water quality improvement objectives would be incorporated into activity plans and especially into AMPs that would be developed for Upper Bitter Creek, Four J Basin, Vermillion Creek, and Upper Salt Wells watersheds.

Wetlands and floodplains within the planning area would be managed in accordance with Executive Orders 11988 and 11990. The 100-year floodplains, wetlands, and riparian areas would be closed to any new permanent facilities (e.g., storage tanks, structure pits, etc.) but linear crossings would be considered on a case-by-case basis (Table 2-8).

Surface disturbing activities (e.g., mineral activities, pipelines, powerlines, roads, recreation sites, etc.) that could adversely affect water quality, and wetland and riparian habitat would avoid the area within 500 feet of or on 100-year floodplains, wetlands, or perennial streams and within 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages. Activities could be allowed if a site specific analysis determines that no adverse impacts would occur to floodplains, wetlands, perennial streams, or water quality and a plan to mitigate impacts to water quality was approved. Linear crossings would be considered on a case-by-case basis (Map 27 and Table 2-8).

Practices would be implemented to protect groundwater and prevent soil contamination. Such practices could include lining of reserve, production, and other types of pits and would include alternate locations for plants, mill sites, ponds, and sewage lagoons where soils are highly permeable (Appendix 5-1). Determinations would be made on a case-by-case basis.

Aquifer recharge areas would be managed to protect groundwater quality and to ensure continued ability for recharging aquifers. Protection would be provided by limiting road density and surface occupancy to maintain a healthy recharge area. Vegetative cover and geologic soil condition that are conducive to groundwater recharge would be maintained. Activities within the Superior recharge area would be designed and allowed only if groundwater quality would be protected.

BLM would cooperate with the State of Wyoming on the Wyoming State 208 plan, and coordinate the development of water quality plans consistent with BLM programs and RMP recommendations.

An area-wide water quality monitoring program to determine sources and causes of water pollution would continue.

Legal protection of those water uses, both consumptive and nonconsumptive (including instream uses), that are necessary for the accomplishment of Bureau programs would be obtained, so that the beneficial uses may be continued or made possible in the future.

See other resource management prescriptions in this document for other restrictions that may apply to watershed or soils management activities.

Wild Horse Management

Management Objectives: The objectives for management of wild horses would be to protect, maintain, and control viable, healthy herds of wild horses while retaining their free-roaming nature; to provide adequate habitat for free-roaming wild horses through management consistent with environmental protection; and to provide opportunity for the public to view wild horses.

Management Actions: Horses would be managed within five Wild Horse Herd Management Areas (Map 28). An appropriate management level of 1,105 to 1,600 would be maintained (Table 2-16). An appropriate management level (AML) of 69 to 100 horses in the Little Colorado Desert would be established (see Table 2-16). The new herd area would encompass about 619,541 acres of BLM-administered public lands and encompass the allotments identified in Table 2-17. The specific boundary and specific management prescriptions for this area would be identified in an activity plan.

Management plans for 5 wild horse herd management areas in the planning area would be implemented. The existing wild horse management plans would be updated to conform with management plan objectives for vegetation management. A monitoring program would be developed to provide information to support wild horse management decisions.

Specific habitat objectives for herd management areas would be developed. Consideration would be given to desired plant communities, wildlife, watershed, livestock, and other resource needs. The feasibility of water development on the checkerboard land portion of the herd area to better distribute wild horses would be determined. Water developments would be proposed in the Rock Springs Allotment primarily to enhance management of wild horses (see the Proposed Allotment Projects appendix in the Draft EIS). Water developments on crucial winter ranges would be allowed if they conform with wildlife objectives and do not result in adverse impacts to the crucial winter range.

Management would ensure that adequate forage (about 17,400 AUMs) would be provided to support appropriate management levels in the herd units and that herds maintain appropriate age, sex, and color ratios.

Selective gathering programs would be implemented in each of the wild horse herd management areas. Fertility control would be initiated only if necessary. These actions would aid in stabilizing populations, managing for conditions and special characteristics, and supply an adoptable population (young horses). Gathering cycles would vary depending upon plan objectives, resource conditions, and needs. See Table 2-18 for estimated populations based on a 3-year gathering cycle. Excess horses would be removed from inside and outside wild horse herd management areas, and gathering plans would be prepared.

Fencing would be restricted to those situations where it would enhance multiple-use values. All new fences would be constructed in such a manner as to minimize restriction of wild horse movement.

Opportunity for public education and enjoyment of wild horse herds by placing interpretive signs, providing interpretive sites, and access to the herd areas would be provided. Signs providing information on wild horses would be placed in strategic locations such as the rest area east of Rock Springs along Interstate 80, on the Bar X Road at the junction with I-80, and at the entrance to the Oregon Buttes and Continental Peak areas on Wyoming Highway 28.

Other resource uses would be maintained and protected consistent with those resource objectives while maintaining viable, healthy herds and appropriate management levels. Wild horse herd management areas would be managed in a natural, healthy state and for an ecological balance among wild horses and land and resource uses.

See other resource management prescriptions in this document for other restrictions that may apply to wild horse management activities.

Wilderness Resource Management

Management Objective: The objective for management of the wilderness resource would be to retain the wilderness quality and manage the areas in accordance with the "Interim Management Policy and Guidelines for Lands Under Wilderness Review," until Congress acts on designation.

Management Actions: Wilderness management plans would be prepared for those WSAs designated by Congress as wilderness. Wilderness Study Areas (223,000 acres) would remain closed to mineral leasing (subject to valid existing rights).

New discretionary uses within or adjacent to WSAs could be reviewed to ensure they do not create conflicts with management and preservation of wilderness values.

Wildlife Management

Management Objectives: The objectives for management of all wildlife and fish habitat would be to maintain, improve, or enhance the biological diversity of all plant and wildlife species while ensuring healthy ecosystems; and to restore disturbed or altered habitat with the objective to attain desired native plant communities, while providing for wildlife needs and soil stability.

The objectives for management of wetlands/riparian areas would be to 1) achieve a healthy and productive condition for long-term benefits and values in concert with range, watershed, and wildlife needs and 2) enhance or maintain riparian habitats by managing for deep-rooted native herbaceous or woody vegetation.

The objective for threatened, endangered, special status, and sensitive plant and animal species would be to provide, maintain, or improve habitat through vegetative manipulation, mitigation measures, or other management actions including habitat acquisition and easements.

Management Actions: To the extent possible, suitable wildlife habitat and forage would be provided to support the Wyoming Game and Fish Department 1989 Strategic Plan objectives. Changes within Wyoming Game and Fish Department planning objective levels would be considered based on habitat capability and availability. This would be based on site specific analysis.

BLM would cooperate with the Wyoming Game and Fish Department (WGFD) in preparation of studies for the introduction and reintroduction of native and non-native wildlife and fish species, within the planning area.

High value wildlife habitats would be maintained or improved through restrictive habitat alteration, appropriate distance and seasonal restrictions, and rehabilitation standards. These habitats include crucial winter habitat, parturition areas, sensitive fisheries habitat, etc.

Big game crucial winter ranges and parturition areas would be protected to ensure their continued useability by limiting activities during seasons of use and the amount of habitat disturbed. See Glossary for surface disturbance factor for wildlife and surface disturbance activity.

Aboveground facilities (power lines, storage tanks, fences, etc.) would not be allowed on or within a ¼ mile radius of active sage grouse strutting grounds. Linear disturbances such as low-traffic roads, pipelines, seismic activity, etc., could be granted exceptions. Activities would avoid the area within ¼ mile radius of active strutting grounds from 6:00 p.m. to 9:00 a.m. daily from February 1 through May 15. Seasonal restrictions (Table 2-9) would be applied through July 31 within an additional 1.75-mile radius (447,170 acres) from leks to protect sage grouse nesting habitat. Exceptions to seasonal restrictions may be granted provided the criteria in Appendix 7-1 can be met.

Active or historic raptor nesting sites would be protected and managed for continued nesting activities (Table 2-8). Nesting raptors would be protected by restricting activities within ½ to 1-mile radius of active or historic raptor nesting sites (depending upon the species) (361,330 acres) (Table 2-9).

Raptor nest surveys would be conducted within a 1-mile radius or linear distance of proposed surface uses or activities if such activities are proposed to be conducted between February 1 and July 31.

No surface occupancy or project component would be allowed within an appropriate distance of active raptor nests. (An active raptor nest is defined as a nest that has been occupied within the past 3 years.) The buffer distance may vary depending upon the species involved, natural topographic barriers, and line-of-sight distances.

All surface disturbing activity (e.g., range improvements, recreation sites, road, pipeline, well pad construction; drilling, completion, workover operations; etc.) would be seasonally restricted from February 1 through July 31 within a ½-mile radius or linear distance of all active raptor nests, except ferruginous hawk nests for which the seasonal buffer would be 1 mile. The seasonal buffer distance and exclusion dates applicable may vary depending upon such factors as the activity status of the nest, species involved, natural topographic barriers, and line-of-sight distance(s) (see Appendix 7-1).

Fences that are documented to be a problem to big game migration would be modified to meet BLM fence standards.

The cooperative management agreement with the WGFD for annual monitoring, maintenance, and the development of additional waters would continue as needed. Livestock water developments would be modified where possible or protected to enhance wildlife habitat and to maintain or enhance water quality.

Livestock and wild horse water developments on crucial winter ranges would be allowed if they conform with wildlife objectives and do not result in adverse impacts to the crucial range.

Needed special management and riparian management exclosures would be developed and/or maintained, and existing exclosure plans would be implemented for enhancement of wildlife habitat. Exclosures would be closed to livestock grazing use and no AUMs in these areas would be available to livestock.

Aquatic, wetland, and riparian habitat would not be suitable for disposal unless opportunities exist for land exchange for lands of

equal or better value. BLM would consider acquiring additional lands along perennial waters and wetlands. Water rights for BLM water developments would be pursued as appropriate.

Management toward proper functioning condition or better of 75 percent of riparian areas would be implemented. Executive Order 11990 for the protection of wetlands would apply.

Seasonal restrictions for surface disturbing activities to protect game fish and special status fish populations during spawning would be applied as necessary.

Animal damage control would be allowed on public lands in accordance with the Predatory Animal Damage Control Decision Record (March 1994). The plan is effective from the date approved through April 1999. Adjustments or refinements in approved activities would be considered and authorized as long as they are within the scope, intent, and objective of the Environmental Assessment and the Decision Record.

BLM would annually evaluate the APHIS animal damage control plan including the need for animal damage control, human safety, safety of domestic animals and non-offending animals, areas where animal damage control would be restricted, and analysis of environmental consequences of animal damage control.

Habitat improvement plans would be developed, particularly for highly developed areas to mitigate wildlife habitat losses. Plans could include habitat expansion efforts, T&E species reintroduction, and population goals and objectives. Such actions as preparing transportation plans and reclaiming roads, seeding, and vegetation enhancement (vegetation treatments, fencing), water developments, and reclamation actions to reduce the amount of existing disturbance, would be considered. Areas identified for consideration of such plans would be Little Colorado Desert, including the Fontenelle II and Blue Forest units, Nitchie Gulch, Wamsutter Arch, Patrick Draw, and Cedar Canyon areas.

See other resource management prescriptions in this document for other restrictions that may apply to wildlife management activities.

Special Designation Management Areas Introduction

The relevance and importance criteria applied to the areas considered for ACEC designation are summarized in Appendix 1-3. A more detailed discussion of the resource values in these areas can be found in Chapter 3, Affected Environment. The management objectives and management actions identified below apply only to BLM-administered public lands and federal minerals. Private and state lands and minerals, and other federal lands administered by other federal agencies are not covered by these actions. Actions on non-BLM-administered lands are determined by the owners/administrators of those lands. Access to private and state lands, where surrounded by BLM-administered lands, would be provided following appropriate analysis.

For additional information, refer to Map A and Table 2-19.

Any proposed ACEC designations identified apply only to BLM-administered public land surface.

Cedar Canyon ACEC (2,550 acres of BLM-administered public lands)

Management Objective: The management objective for the BLM-administered public lands in the Cedar Canyon ACEC would be to provide protection and enhancement of relevant and important cultural values, scenic values, and wildlife habitat in the area.

Management Actions: The BLM-administered public lands in the ACEC would be open to consideration for mineral leasing with restrictions to protect cultural and wildlife values, particularly raptors and raptor habitat, big game winter range, and watershed values (Table 2-9, Table 2-8, and Table 2-4).

Vegetation would be managed to provide habitat for wildlife. Habitat for raptors would be maintained or enhanced. Cliffs, tree hollows, and pinnacles would be managed to provide nesting habitat. The ACEC would be closed to wood cutting and the removal of other vegetative product materials.

Site specific analyses would be conducted to alleviate conflicts between wildlife use, livestock grazing, and development activities. Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the watershed, water quality, fisheries, recreation, and riparian management objectives. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

Highly erodible soils throughout the ACEC would be managed to maintain or reduce erosion levels and to improve vegetative ground cover. Guidelines necessary to protect these areas would be developed. Surface disturbing activities may require approval of engineering design plans. Where necessary, identified roads would be upgraded, maintained, and properly surfaced in accordance with BLM standards.

Opportunities for the various dispersed recreational activities (e.g., camping, picnicking) that occur in the area would be made available. This may include maintaining, preserving, or enhancing existing opportunities and developing new opportunities to provide for an optimum visitor experience. Facilities and projects would be signed to interpret and provide information about sites in the area and directions for travel through the ACEC.

Off-road vehicle travel in the ACEC (including over-the-snow vehicles) would be limited to designated roads and trails. All off-road vehicle travel in the area would be restricted during the winter and spring to protect wildlife during high stress periods of severely cold temperatures, heavy snow cover and short food supply.

BLM would attempt to acquire needed access to this ACEC. Signing and closing of all nonessential roads and trails would be accomplished along with providing legal and physical access.

The ACEC would be managed consistent with the Class III and Class IV visual resource management classifications to protect, maintain, and enhance the visual resource values. All future facilities would be designed to blend with the landscape, including painting where necessary, and disturbed areas would be revegetated to keep visual resource impacts to a minimum.

A reclamation plan for disturbed areas would be prepared to restore lost habitat. Reclamation of some areas may be required prior to disturbing additional areas.

Existing wildlife waters would be maintained and additional wildlife waters would be developed.

Proposed surface disturbing activities on BLM-administered public lands, within ½ mile from a large rock art site (360 acres) would be analyzed for the visual effects to the actual area that can be seen from the rock art site within the ½ mile area surrounding the site (vista). Most surface disturbing activities visible within this vista would not be allowed. Some disturbance activities, such as interpretive facilities, within ½ mile of a rock art site would be allowed, if they do not affect the rock art site. Other kinds of activities, such as

audible disturbances, would not be allowed if they would adversely affect the sacred Native American religious values at a rock art site.

The vista area would also be closed to: 1) the location of mining claims and entry under the land laws (withdrawal from land entry and mineral location would be pursued); 2) mineral material sales; 3) the use of explosives and blasting, and vibroseis operations; and 5) the use of fire retardant chemicals containing dyes. Off-road vehicles (including over-the-snow vehicles) would be limited to designated roads and trails.

About 2,190 acres more than ½ mile from the rock art (i.e., outside of the 360 acres of vista area) would also be an avoidance area, open to other surface disturbing activities, with constraints to protect wildlife, cultural, and scenic resource values if the area could not be avoided and if disturbed areas could be reclaimed to blend with the landscape. New rights-of-way would be required to follow existing roads and rights-of-way in the ACEC wherever feasible (Table 2-4). Limited surface facilities for other surface disturbing activities could be considered if they meet the management requirements for the ACEC.

In summary, the 2,190 acres outside the 360-acre vista area would be open to: 1) the location of mining claims; 2) mineral material sales; and 3) seismograph activity including the use of explosives and blasting, provided the wildlife, cultural, and scenic values could be protected.

Coal leasing in the ACEC would be considered for subsurface mining methods only. Leasing for surface coal mining methods in the area would be prohibited. Any activities or ancillary facilities related to either surface or subsurface mining would not be allowed on or within a full ½ mile radius of rock art sites (about 500 acres).

About 2,050 acres more than ½ mile from the rock art site (i.e., outside of the 500 acres within the ½ mile radius area), would also be open to consideration for federal coal leasing for subsurface mining methods only. Seasonal uses and types or placement of surface facilities, activities, etc., related to subsurface mining in this area would be allowed on a very limited basis. This area includes about 643 acres of Federal Surface State Coal lands that would be affected.

The BLM-administered public lands in the Cedar Canyon area continue to meet the relevance and importance criteria. See Appendix 1-3 for a summary of the criteria specific to this area, and Chapter 3. Therefore, the ACEC designation for the BLM-administered public lands in the area would be retained.

Greater Red Creek Proposed ACEC (131,890 acres of BLM-administered public lands)

The Greater Red Creek area includes the BLM-administered public lands in the Currant Creek and Sage Creek watersheds (including their tributaries), and the original, existing Red Creek ACEC.

Management Objectives: The management objectives for the area would be to: 1) improve watershed condition and enhance watershed values, including, but not limited to, improving channel stability, vegetation diversity and abundance, and water quality; 2) improve riparian areas that are at less than Proper Functioning Condition (PFC) to PFC as a minimum; 3) repair, improve, or maintain Colorado River cutthroat trout habitat in Red, Currant, Trout, and Sage Creeks and their tributaries; 4) provide opportunities for dispersed recreation uses in the area that are consistent with the primary watershed, riparian, and fisheries management objectives; 5) to allow the recreation user the opportunity to have a high degree of interaction with the natural environment, to have moderate challenge, and to use outdoor skills; 6) maintain important wildlife habitat; 7) preserve scenic resources; and 8) reduce the amount of sediment being delivered to the Green River through Red Creek by reducing accelerated sheet, rill, gully, and channel erosion.

Actions that Apply to the Entire Area

Management Actions: All resource and land uses in the area would be managed in support of watershed stability and Colorado River cutthroat trout habitat management objectives. Various dispersed recreation uses would be allowed. Management would be provided to maintain or improve important wildlife habitat.

The Greater Red Creek area would, in general, be managed as an avoidance area for rights-of-way and surface and surface disturbing activities (Table 2-8 and Table 2-4). Exceptions in some specific areas are described in the individual watershed sections.

Any actions to be conducted in the proposed ACEC would be considered and analyzed on a case-by-case basis. Controls may be placed on the amount, sequence, timing, or level of activity or development that may occur to assure that the actions would be consistent with or help to meet the management objectives for the area. This may result in such things as limiting the number of roads and other construction, or other surface disturbing activities or development in some areas until other areas have been reclaimed and restored to other (original) uses (Appendix 5-2).

Most of the area would be open to mineral leasing and related exploration and development activities with appropriate mitigation requirements applied to protect the other important resource values.

The area would be open to consideration for such activities as fencing, interpretive signs, construction and placement of transportation barriers, sediment or erosion control, and fish habitat structures to meet resource management objectives.

Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the watershed, water quality, fisheries, recreation, and riparian management objectives. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

Any activity that would preclude the achievement of proper functioning condition of uplands and riparian areas and achievement of other management objectives would not be allowed.

Forested areas would be managed primarily toward meeting the watershed, riparian, fisheries, and recreation objectives for the area. Timber harvest levels and logging practices would be designed to help meet those objectives.

Although big game habitat should improve through the proposed management of the area, any increase in vegetative production would be reserved for watershed stabilization and improvement purposes.

Habitat for special status species habitat would be monitored and site specific activity plans would be developed to address habitat repair, maintenance, and enhancement needs. Re-introduction of Colorado River cutthroat trout and other native species would be considered if consistent with watershed and riparian objectives, in cooperation with the Wyoming Game and Fish Department.

Travel and transportation of firefighting equipment would be limited to designated roads and trails. Use of heavy equipment would be prohibited in areas closed to surface disturbing activities. Fire management, suppression needs, and prescribed burning in timber stands would be evaluated on a case-by-case basis to ensure timber stands are maintained in healthy condition and the "snowfence effect" is preserved. Fire management in other areas would be evaluated on a case-by-case basis to ensure that area objectives would be met.

Aquifer recharge zones in the area would be managed to protect groundwater quality. Protection includes limiting road density, surface disturbing activities, and surface occupancy in identified recharge zones, in order to maintain them in a healthy and functioning condition (Map 26).

Vegetation treatments would be designed to help meet and be consistent with all management objectives for the area. Treatments in the inner gorge of intermittent and ephemeral drainages would be designed to leave mosaic patterns of treated and untreated areas of vegetation.

Herbicide loading sites would be located at least 500 feet from surface water or riparian areas (whichever is greater). Herbicide treatment of noxious weeds on BLM-administered public lands would first require a site specific analysis to help determine whether or not such action would be authorized.

Recreation development would be kept to a minimum. On-site controls and facilities would be provided for the protection of resource values and the safety of the users only. Camping would be allowed within 200 feet of surface water if damage to watershed, water quality, and wildlife values can be avoided. Otherwise, camping would be restricted or prohibited within this zone.

Off-road vehicle travel within the area on BLM-administered public lands would be limited to designated roads and trails. A transportation plan would be developed for the area. Some existing roads and trails in the area may be closed and reclaimed as a result of transportation planning. Transportation planning would include consideration of proper road location, construction, reconstruction, design, and reclamation. New road construction would be reviewed on a case-by-case basis for conformance with area and transportation plan objectives. In some cases, consideration of a "no net gain in roads" factor may be an effective way to help meet objectives in the area.

Actions Unique to the Sage Creek Watershed

Management Actions: About 9,600 acres of federal coal in the Sage Creek watershed would be acceptable for further consideration for development by surface and subsurface coal mining methods, with certain stipulations. Coal leases and development in the area would include a requirement for plans of development, mining plans, etc., to include adequate mitigation measures to assure protection of the fisheries and watershed values, prior to allowing any mining activity. The watershed would be managed consistent with the Class III visual resource management classification.

Actions Unique to the Currant Creek Watershed

Management Actions: All BLM-administered public lands within this watershed would be closed to: 1) surface disturbing activities (see Glossary and Table 2-8); 2) mineral material sales; and 3) mineral location. A withdrawal from mineral location would be pursued (about 23,740 acres). This area is also an exclusion area for rights-of-way (Table 2-4). Exceptions to these requirements are as follows:

> A north-south right-of-way window, parallel to the east side of the Flaming Gorge National Recreation Area would be established at County Road 4-33 or to the west of this road.
>
> Aboveground power lines that span the drainage (from rim to rim) could be considered east of this county road if environmental analysis demonstrates that scenic, watershed, and fisheries objectives could be met.

The rim areas within the Currant Creek watershed (tops of the watershed ridges) with slopes of less than 25 percent could be considered for surface disturbing activities if environmental analysis demonstrates that watershed, fisheries, wildlife, and scenic objectives could be met. Within the Currant Creek watershed, slopes greater than 25 percent and areas in or within 500 feet of riparian areas and floodplains would remain closed to surface disturbance unless the action is designed specifically for the enhancement of watershed values and Colorado River cutthroat trout habitat.

The BLM-administered public lands in the watershed would be closed to coal and sodium exploration, prospecting, leasing, and development activities (Table 2-10).

BLM would pursue possibilities of land exchanges to acquire lands along Currant Creek and Trout Creek to improve management opportunities for Colorado River cutthroat trout and its habitat (Appendix 8-3).

The area would be managed consistent with the Class II visual resource management classification.

Fire suppression activities in this watershed would be limited to containment at ridgetops.

Actions Unique to the Red Creek Watershed

Management Actions: The BLM-administered public lands within this watershed (55,880) would be closed to: 1) surface disturbing activities (see Glossary); 2) mineral leasing (Table 2-8); 3) mineral material sales; and 4) mineral location. A withdrawal from mineral location would be pursued for the area. The existing pipeline right-of-way concentration area would be an avoidance area for any additional rights-of-way. However, that part of the right-of-way concentration area, from the escarpment south to Richards Gap, would be closed to any new rights-of-way development for at least a 10-year period to allow soils to stabilize from previous disturbance. At the end of the 10-year period, new rights-of-way in the area could be reconsidered if satisfactory stabilization has occurred (Table 2-4). The remainder of the BLM-administered public lands that lie east of the right-of-way concentration area would also be managed as an exclusion area for rights-of-way.

A right-of-way grant has been issued to Questar Pipeline Company to build the Mainline 58 pipeline across public lands through the Red Creek escarpment. Future rights-of-way across public lands through this area (for linear utilities, transmission lines, communication sites, roads and highways, etc.), that would adversely affect the stabilization of the watershed would be prohibited. Should the Mainline 58 Pipeline not be built, the area would be considered closed and any subsequent right-of-way proposal, to either replace or substitute for the Mainline 58 Pipeline, or any similar future proposed action across public lands in the area, would be prohibited. The area would remain closed to any new right-of-way development for at least a 10-year period to allow for watershed stabilization.

The area would be managed consistent with the Class II visual resource management classification.

The Red Creek watershed would be managed to minimize accelerated erosion and increased sedimentation into the Green River/Colorado River system. Maintenance activities, such as road maintenance, could be accomplished to meet area objectives and provide needed improved access. Borrow material for this purpose could be obtained provided no any access would be built to obtain the material and provided disturbance does not cause additional erosion or watershed degradation. The borrow area would also be satisfactorily reclaimed. Large commercial sources of material would not be considered an acceptable use in the area.

A portion of the Red Creek ACEC overlaps the Red Creek Wilderness Study Area (about 8,020 acres). Wilderness manage-

ment recommendations and alternatives for this area are addressed in the Rock Springs District Final Wilderness EIS. As mentioned earlier in this document, because the proposed management in this overlap area is more stringent than either the interim wilderness management policy or management for designated wilderness areas, it is being addressed here.

The 8,020 acres of the area that overlap the Red Creek WSA would be closed to off-road vehicle travel, including over-the-snow vehicles, in order to maintain natural conditions, outstanding opportunity for solitude, or a primitive or unconfined type of recreation in the area. Mechanized vehicle use would be determined on a case-by-case basis.

This 8,020-acre portion would also be closed to oil and gas leasing, mineral location (withdrawal would be pursued), and geophysical activities (Table 2-14 and Table 2-13).

The BLM-administered public lands in the Greater Red Creek area, including the Currant Creek and Sage Creek watersheds and the original Red Creek ACEC, meet the ACEC relevance and importance criteria. See Appendix 1-3 for a summary of the applicable criteria and Chapter 3 for a more detailed description of the area. Therefore, the 131,890 acres of BLM-administered public lands in the Greater Red Creek area would be designated the Greater Red Creek ACEC.

Greater Sand Dunes ACEC (38,650 acres of BLM-administered public lands)

Management Objectives: The management objectives of the BLM-administered public lands in the Greater Sand Dunes ACEC would be to preserve and protect the integrity of the unique values in the area for future public use and enjoyment. These values include the unusual geological features associated with the sand dunes and the Boars Tusk, and the biological interrelationships supported by the dunes, especially the Steamboat desert elk herd, mule deer herd, other dependent plants and animals, and a variety of recreation uses.

General Area

Management Actions: The BLM-administered public lands in the ACEC would be managed consistent with the Class II visual resource management classification. The visual impacts of existing or future facilities (e.g., producing wells) or other visual intrusions in the area would be evaluated and mitigated to the extent reasonable.

The BLM-administered public lands in the Greater Sand Dunes area and those within 1 mile or the visual horizon of the area would be avoidance areas for new rights-of-way (approximately 70,850 acres).

Any surface disturbing activities within the Wasatch and Green River Formations would require paleontological clearance. Activities that would be incompatible with recreation sites would be managed to avoid recreation sites. The BLM-administered public lands in the area would be closed to mineral material sales.

Livestock grazing would continue in the ACEC. Maintenance and use of existing rangeland improvements on the BLM-administered public lands would be allowed. Proposed rangeland improvements must be part of an allotment management plan, and be consistent with the management objectives for the area. Environmental analyses of such improvements would be conducted to consider the effects on the resource values of the area of rangeland improvement construction and maintenance activities, and the type of equipment used for these activities. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

Materials used for new improvements must be compatible with the natural character of the area to reduce intrusive visual effects on the natural environment.

Wild horse use in the area would be consistent with the Divide Basin Wild Horse Management Plan and the management objectives for the area. No wild horse traps would be constructed within the area.

To support and improve the diversity of wildlife species within the area, habitat on the BLM-administered public lands would be protected, maintained, or enhanced. Crucial elk winter range in the area would be maintained as an essential component of the Steamboat Mountain-Sands elk habitat.

Projects to improve the interdunal ponds for bird, amphibian, and mammal habitat would be developed on the BLM-administered public lands following a site-specific analysis.

Interpretive materials and educational programs would be developed to describe wildlife and cultural values in the area.

Native vegetation would be maintained and protected on the BLM-administered public lands to allow natural plant succession to continue. Revegetation of disturbed areas with big sagebrush and other adaptable shrubs would be required to maintain and/or improve big game habitat.

A diversity of non-motorized recreation uses, including hiking, bird-watching, photography, sightseeing, and hunting, would be encouraged. Appropriate recreation facilities would be developed and maintained on BLM-administered public lands to provide for a diversity of motorized and non-motorized recreation uses. Two roads that pass through or adjacent to the area would be designated as part of the Tri-Territory backcountry byway (see Map 22). Camping would be restricted to the BLM 14-day limit, and subject to "Pack In-Pack Out" requirements for trash, etc. (see Recreation Resource Management for this alternative).

Additional or Different Items Specific to the Western Portion

The western portion of the Greater Sand Dunes area is bounded on the east by the Sand Dunes WSA boundary and on the west by the existing Greater Sand Dunes ACEC boundary.

Management of the portion of the Greater Sand Dunes area that overlaps the Buffalo Hump and Sand Dunes WSAs (25,250 acres in the western portion of the Sand Dunes area) is directed by the "Interim Management Guidelines for Lands Under Wilderness Review." As mentioned earlier in this document, because proposed management in this overlap area is more stringent than either the interim management policy or wilderness policy for designated wilderness areas, it is being addressed here. Wilderness management recommendations and alternatives for this area are addressed in the Rock Springs District Final Wilderness EIS.

The portion of the area that overlaps the WSAs would be closed to off-road vehicles, including over-the-snow vehicles, and some mechanized vehicles to maintain the unique naturalness, solitude, and primitive and unconfined recreational opportunities.

This overlap portion would also be closed to oil and gas leasing, mineral location, and geophysical activities. The oil shale withdrawal would remain in effect until a comprehensive study was completed for the area and, if necessary, lands could be identified to be withdrawn for protection of their resource values (Table 2-5).

The approximate 4,360 acres of Federal coal lands in the area would be closed to further consideration for coal leasing.

BLM would pursue land exchanges to improve the manageability of the area (1,920 acres).

Additional or Different Items Specific to the Eastern Portion

The eastern portion of the area is bounded on the west by the Sand Dunes WSA and on the east by the existing ACEC boundary.

The issuance of Federal minerals leases on BLM-administered public lands in the eastern portion of the Sand Dunes area (about 16,390 acres) would be contingent upon completing a comprehensive and detailed, site specific activity or implementation plan encompassing the combined Steamboat Mountain and Greater Sand Dunes areas. This detailed implementation plan would identify areas of feasible access, allowable road densities, and how much and what type of development would be acceptable in the area (e.g., field unitization may be a requirement for oil and gas development activities in the area). Activities in the area would be required to conform with visual resource management classifications and prescriptions. Geophysical activities, including off-road vehicle travel, would be allowed provided resource damage would be minimized and the activities would conform with ORV designations and transportation plans for the area. Drilling of additional oil and gas wells or production from temporarily shut-in wells could be allowed upon completion of the activity or implementation plan.

The relatively pristine portion of the eastern area that has no developments (approximately 8,800 acres), including the base of Steamboat Rim, would be managed to protect big game habitat, vegetation communities, and visual and recreation resources.

Road construction and new access may not be feasible for much of the entire eastern portion. To prevent conflicts with big game, recreation users, and other resource and land use activities, alternative access methods may be needed (use of existing or designated roads or pads, seasonal travel requirements or restrictions, use of helicopters, etc).

Activities would not be permitted to disrupt access to or use of developed and semi-developed recreation sites.

Approximately 9,840 acres of Federal coal lands in the area would be closed to coal leasing and development by surface mining methods and related surface facilities and activities. This area would be open to coal leasing for subsurface mining methods with placement of surface facilities extremely limited.

Surface disturbing activities, geophysical activities, and oil and gas exploration and development activity would be restricted on crucial big game winter ranges and big game birthing areas. Exceptions to this requirement may be approved for activities such as oil and gas development, rights-of-way, construction, and range improvement development, if conditions described in Appendix 7-1 apply. Once an operation starts (such as oil and gas drilling/completion), it would be allowed to be completed into or through the winter. Decision points for shutdown due to unacceptable winter conditions would occur between such things as pad construction and drilling startup, and between drilling/completion and production facility installation.

Surface water, soils, and shallow aquifers would be protected from contamination by practices such as closed drilling systems or installation of pit liners. Pit liners would be removed prior to reserve pit reclamation. Dune ponds would not be used as water sources for development activities.

New linear facilities such as pipelines and powerlines in the existing area of development would be laid on the surface, or buried adjacent to access roads or within existing concentration areas containing such lines. New pipelines in the stabilized dune areas would be installed as surface lines to avoid unnecessary disturbance of vegetation. Powerlines could be buried. Existing surface gas pipelines would be monitored by the operators to identify potential hazards to ORV users. Identified hazards would be marked to improve visibility. A recreation user map would be developed in cooperation with oil and gas operators to show the location of aboveground facilities (e.g., pipelines, well production facilities, snow fences, etc.).

Any proposed activity or use that would involve surface disturbance (see Glossary) would be required to have appropriate engineering design, geotechnical analysis, mitigation planning, etc.

Abandoned pipelines and other unnecessary facilities (e.g., snow fence), etc., in unstabilized dune areas would be removed.

About 10,500 acres would continue to be designated open for off-road vehicle travel on the active sand dunes. Off-road vehicle travel on about 5,810 acres of stabilized dune areas would be limited to existing roads and trails.

Crookston Ranch and Boars Tusk

The Crookston Ranch site would be managed to preserve its historic features and for the interpretation of ranching history in the area. About 500 acres of BLM-administered public lands surrounding the site would be managed to preserve the setting of the historic ranch.

The Boars Tusk would be managed to preserve its value as a geologic feature.

The Crookston Ranch (40 acres) and the Boars Tusk (90 acres) areas would be closed to: 1) surface disturbing activities (see Glossary) (Table 2-8 and Table 2-4); 2) mineral material sales; and 3) use of explosives and blasting. Additionally, the area within a ½ mile radius of the Boars Tusk would be closed to blasting and explosive charges (about 500 acres).

The Crookston Ranch and Boars Tusk areas would be open for consideration of activities such as fencing, interpretive signs, or transportation barriers to ensure protection of the sites. Facilities would be prohibited from being developed on site. Either a protective right-of-way or withdrawal would be pursued to accomplish this.

Off-road vehicle use would be limited to designated roads and trails in these two areas. The road around the Boars Tusk would be closed.

Fires in the Crookston Ranch area would be immediately suppressed if there is any potential of the structures being burned.

The Boars Tusk and about 1,400 acres of BLM-administered public lands in the surrounding area would be managed to retain natural and geologic values. The area would be closed to any surface mining activity such as coal mining and any related surface facilities. The Crookston Ranch and surrounding 500-acre area would be closed to surface mining activities such as coal mining, and to the placement of related surface facilities.

The BLM-administered public lands in the Greater Sand Dunes area (38,650 acres) continue to meet the ACEC relevance and importance criteria. See Appendix 1-3 for a summary of the applicable criteria and Chapter 3 for a description of the values in this area. Therefore, the ACEC designation for the BLM-administered public lands in the area would be retained.

Natural Corrals ACEC (1,276 acres of BLM-administered public lands)

Management Objective: The management objective for BLM-administered public lands in the Natural Corrals area would be to protect and enhance the cultural, historical, recreation, and geological values in the area.

Management Actions: The entire area would be open to consideration for oil and gas leasing with a No Surface Occupancy stipulation.

Any surface disturbing activities (see Glossary) that could adversely affect the relevant and important resources in the area would be prohibited (Table 2-8 and Table 2-4). The area would be closed to surface coal mining activity and related facilities and to mineral material sales.

The existing withdrawal, closing 357 acres of BLM-administered public lands and federal minerals in the area to mineral location (Table 2-5), would be retained. The public water reserve withdrawal in section 12 would be revoked, since the land it is on is now privately owned. A filing for a BLM water right would be pursued if necessary.

The area would be open to consideration of such activities as fencing, interpretive signs, or construction of transportation barriers or barriers to other types of uses, to meet resource management objectives. Management activities would be designed to increase public awareness of the significance of the area.

Cultural resource values on BLM-administered public lands in the area would be protected by using stabilizing in place archeological components and by limiting surface disturbing uses and activities that would adversely affect the cultural resources. The components may be excavated to recover archeological information if stabilization is not effective. Crucial big game winter range seasonal restrictions and raptor nesting restrictions would be applied to activities that would be disruptive and excessively stressful to big game animals and raptors during these critical periods (Table 2-9).

The area would be managed consistent with the Class III and IV visual resource management classification.

The existing road/trail from the spring located in the SE¼NW¼, NE¼SW¼ of Section 18 and the National Register of Historic Places (NRHP) site would remain closed to off-road vehicle use. The 20-acre NRHP would also be closed to off-road vehicle use for geophysical activities and by over-the-snow vehicles. This site would also be closed to the use of explosives and to blasting. The remainder of the area would be open to over-the-snow vehicles and all other off-road vehicle travel would be limited to designated roads and trails.

Prescribed management actions for livestock grazing would include continuous monitoring, establishing objectives for livestock use in riparian areas, and encouraging cooperative management. Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

The wild horse herd use would continue and monitoring would occur to ensure resources would be protected. No wild horse traps would be constructed in the area.

In conformance with the management objectives, the opportunities in the area for various recreational activities such as camping, picnicking, winter sports, and hunting, would be developed, maintained, preserved, or enhanced to provide for an optimum and satisfying visitor experience. A "Pack In-Pack Out" policy and a 14-day stay limit would apply for camping. Camping around the spring (within 200 feet) would be prohibited.

The BLM-administered public lands in the Natural Corrals Area (1,276 acres) continue to meet the ACEC relevance and importance criteria. See Appendix 1-3 for a summary of the applicable criteria and Chapter 3 for a description of resource values in the area. Therefore, the ACEC designation for the 1,276 acres of BLM-administered public lands in the area would be retained.

Oregon Buttes ACEC (3,450 acres of BLM-administered public lands)

Management Objectives: The management objectives for the Oregon Buttes area would be to protect and enhance the scenic integrity as a historic landmark and to protect the significant wildlife values that are found in the area.

Management Actions: The ACEC is within the boundaries of three WSAs. Wilderness management, recommendations, and alternatives for this area are addressed in the Rock Springs District Final Wilderness EIS. The wilderness study area acreage would not be identified for specific management unless the management is more stringent than either the Interim Management Policy or wilderness management.

The ACEC would be closed to surface disturbing activities (see Glossary) that could adversely affect the resource values in the area (Table 2-8 and Table 2-4); to mineral material sales for sand, gravel, or other types of construction or building materials; and to off-road vehicle travel, including those utilized for seismograph operations.

The ACEC would be open to consideration of such activities as fencing, interpretive signs, or construction of barriers to ensure protection to the area. Seasonal restrictions for raptors and big game parturition areas would apply (Table 2-9).

Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

The Oregon Buttes area would be managed consistent with the Class II visual resource management classification. Management actions would be designed to blend into the natural landscape and retain the existing character of the landscape.

The BLM-administered public lands in the Oregon Buttes area continue to meet the ACEC relevance and importance criteria. See Appendix 1-3 for a summary of the applicable criteria and Chapter 3 for a more detailed description of the resource values in the ACEC. Therefore, the ACEC designation for 3,450 acres of BLM-administered public lands in the area would be retained.

Pine Springs ACEC (90 acres of BLM-administered public lands) and Proposed Expansion Area (5,940 acres of BLM-administered public lands)

Management Objective: The management objective for the Pine Springs area would be to enhance and protect cultural, historic, and prehistoric resource values.

Management Actions: Approximately 5,200 acres of the Pine Springs proposed expansion area overlap the Devils Playground/Twin Buttes WSA which is managed under the "Interim Management Policy for Lands Under Wilderness Review." Recommendations and alternatives for this area are addressed in the Rock Springs District Final Wilderness EIS. Because the proposed management in this overlap area is more stringent than either the interim management policy or management for designated wilderness area, it is addressed here.

The area would be closed to surface disturbing activities (see Glossary) that could adversely affect it (Table 2-8 and Table 2-4); to

mineral location and an additional withdrawal of about 2,000 acres pursued (Table 2-5); to mineral material sales for sand, gravel, or other types of construction or building materials; and to off-road vehicle and some mechanized vehicle travel, with the exception of 730 acres. The remainder of the area (about 730 acres) and the existing road through the Pine Springs area would be limited to existing roads and trails (Table 2-14).

The existing Pine Springs site (90 acres) would be closed to all geophysical operations and to the use of explosives and blasting.

The area would be open to consideration of such activities as fencing, interpretive signs, or construction of barriers to ensure protection to the area; to maintenance of the existing spring development; and to additional spring developments if the action would not impact cultural values.

The entire area would be managed consistent with the Class III visual resource management classification, and management actions on the BLM-administered public lands classified as Class III visual resource management lands would be designed to partially retain the existing character of the landscape.

Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

BLM-administered public lands in the Pine Springs area and the surrounding expansion area meet the ACEC relevance and importance criteria. See Appendix 1-3 for a summary of the applicable criteria and Chapter 3 for a more detailed description of the resource values in the area. Therefore, 6,030 acres of BLM-administered public lands in the Pine Springs area would be designated an ACEC.

South Pass Historic Landscape Proposed ACEC (53,780 acres of BLM-administered public lands)

Management Objective: The management objective for the area would be to protect the visual and historical integrity of the historic trails and surrounding viewscape.

Management Actions: The South Pass Historic Landscape would encompass the viewshed along the Oregon, Mormon Pioneer, California, and Pony Express trails and the Lander Cutoff (about 16.42 miles of trail with a 6-mile wide corridor along the Oregon, Mormon Pioneer, and California trails, and a 2-mile wide corridor along the Lander Cutoff) (Map 29).

The landscape would be open to consideration of mineral leasing and mineral material sales, provided the visual and cultural concerns could be mitigated. Most of the area would also be open to exploration and development of locatable minerals. A plan of operations would be required to address measures to mitigate affects to the viewshed before any mining claim activity would be allowed. A withdrawal of about 5,260 acres would be pursued, if necessary.

A right-of-way grant has been authorized, but not yet issued, for the Altamont Pipeline Company to build a pipeline across public lands through the South Pass Historic Landscape Area. Should this grant be issued, it would be a one-time right-of-way authorization through the South Pass Historic Landscape Area. Future rights-of-way across public lands through this area (for linear utilities, transmission lines, communication sites, roads and highways, etc.), that would adversely affect the values of the historic landscape would be prohibited. In addition, should the Altamont Pipeline not be built, the South Pass Historic Landscape Area would be considered closed and any subsequent right-of-way proposal, to either replace or substitute for the Altamont Pipeline, or any similar future proposed action across public lands in the area, would be prohibited (Map 29).

About 33,700 acres surrounding the trails and visible from the trails would be closed to surface disturbing activities (see Glossary) that could adversely affect the viewshed (Table 2-8 and Table 2-4). This would be an exclusion area for all rights-of-way. Off-road vehicle travel would be limited to designated roads and trails.

About 20,080 acres that are shielded by topography and not visible from the trail would be open to development activities if they would be subordinate to the existing landform and not visible from the historic trail, and provided that environmental analysis indicates that the visual integrity of the area can be maintained. Rights-of-way would be managed to avoid this area, and this area would not be considered as a preferred route for linear facilities. Small feeder lines could be allowed if analysis indicates that the visual integrity of the area would not be compromised. Rights-of-way along existing roads in the area could also be allowed if they did not compromise the visual integrity of the area. The prescriptions for the management of historic trails would also apply to this area. Off-road vehicle travel would be limited to existing roads and trails.

All activities for the entire area would be managed consistent with the Class II visual resource management classification and all management actions would be designed and located to blend into the natural landscape and to not be visually apparent to the casual viewer. The scenic values of the Highway 28 visual corridor (3 linear miles) would be protected.

Generally, vibroseis activity would not occur within 300 feet of the historic trails. Shothole activity would not be allowed along the trails. Other geophysical operations would be allowed within the historic trails corridors (16.42 miles) if site specific analysis determines that no effects adverse to the visual and historical integrity of the trails would occur.

The entire area would be open for consideration of such activities as fencing, interpretive signs, or construction of barriers to ensure protection of the landscape.

Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

Wild horse management in the area would be consistent with the Divide Basin Wild Horse Management Plan and the management objectives for the area. No wild horse traps would be constructed within the area visible from the trails.

Site specific activity planning would consider nomination of South Pass to the National Register of Historic Places as an historic landscape.

The BLM-administered public lands in the South Pass Historic Landscape area were found to meet the ACEC relevance and importance criteria. See Appendix 1-3 for a summary of the applicable criteria and Chapter 3 for a more detailed description of the resource values in the area. The area would be designated an ACEC.

Special Status (Candidate) Plant Species Proposed ACEC (900 acres of BLM-administered public lands)

Management Objective: The management objective for special status (candidate) plant species would be to prevent destruction or

loss of special status (candidate) plant communities and their important habitat, and to provide opportunities for enhancing or expanding their habitat and to provide them sufficient protection to prevent their listing as threatened and endangered species.

Management Actions: The BLM-administered public land areas occupied by four special status (candidate) plant species would be included in the proposed ACEC designation (about 900 acres of BLM-administered public lands). Additional acres of public land may be added, if more of these special status (candidate) plant species or crucial habitat areas are found on BLM-administered public lands. Management and protection to actual plant locations would be provided for *Arabis pusilla*, *Astragalus proimanthus*, *Descurainia torulosa*, and *Thelesperma pubescens* (Map A).

Locations of these special status (candidate) plant species and essential and/or important habitats would be identified. The ACEC (about 900 acres of BLM-administered public lands) (see Map 24) would be protected and closed to: 1) direct surface disturbing activities (see Glossary) or any disrupting activities (e.g., off-site dust, air pollutants, etc.) that could adversely affect the special status plant species and their habitat (Table 2-8 and Table 2-4); 2) the location of new mining claims (withdrawal from mineral location would be pursued); 3) surface occupancy for surface disturbing activities (such as leasable mineral exploration and development activities or for construction or long-term placement of facilities or structures); 4) mineral material sales; and 5) the use of explosives and blasting.

Known locations of special status (candidate) plant species communities would be closed to off-road vehicle travel. The remainder of the ACEC would be limited to designated roads and trails.

While ensuring the maximum protection to the plant species, mineral lease parcels would be designed prior to lease issuance, with the intent of providing access to mineral resources, where possible.

Searches would be conducted to identify any additional areas where special status (candidate) plant species are located. Habitat needs would be determined and management prescriptions would be specified. The window for inventory would be mainly from May through August. As new populations are identified, site boundaries and any ACEC designation on BLM-administered public lands would be expanded to cover any new or expanded sites. Should a plant species be removed from the special status (candidate) plant species list, the portion of any ACEC designation attributed to that plant species would be discontinued. The ACEC acreage could, thus, increase or decrease, depending upon the results of the searches or if a plant species should be de-listed. Nonessential habitat to support these plants would not be included in an ACEC designation.

Searches would be required on potential habitat areas prior to implementing surface disturbing activities or projects. If a plant were not found in a potential habitat area, surface occupancy and activities would be allowed with proper guidelines and mitigation for the habitat. If plants were found, the site and its associated habitat area would be avoided and surface occupancy would be prohibited.

Special status (candidate) plant species population areas would be closed to any surface disturbing fire suppression activities unless necessary for species survival. The use of fire suppression ground vehicles would be consistent with ORV designations in these areas. The type of suppression activity, if any, would be determined through site specific analysis.

Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

Wild horse management in the area would be consistent with wild horse herd management plans and management objectives for this area. No wild horse traps would be constructed within this area.

BLM would attempt to acquire approximately 1,900 acres on Pine Butte to enhance management for the mountain tansymustard (*Descurainia torulosa*).

Activities such as fencing, interpretive signs, or barriers for the purpose of ensuring protection of the plant species would be considered for both existing and potential habitat areas.

The locations of these four special status (candidate) plant species on BLM-administered public lands were found to meet the ACEC relevance and importance criteria. See Appendix 1-3 for a summary of the applicable criteria and Chapter 3. Therefore, these sites would be designated an ACEC.

Steamboat Mountain Proposed ACEC (43,270 acres of BLM-administered public lands)

Management Objectives: The management objectives for this area would be 1) to enhance and maintain the water quality, vegetation, soil, and wildlife resources to ensure biological diversity and a healthy ecosystem; 2) to maintain the unique diverse habitats (big sagebrush, aspen, limber pine, and mountain shrub communities) in the Steamboat Mountain area, especially on stabilized sand dunes along Steamboat Rim, Indian Gap, and in the Johnson, Lafonte, and Box Canyon areas; and 3) to provide suitable habitat to maintain the continued existence of the Steamboat elk herd and other big game populations (Map A).

Management Actions: All activities would be designed to place priority on elk habitat considerations over conflicting land uses to ensure continued elk use of the area. Steamboat Rim and the base of the rim would be managed to protect big game habitat, vegetation communities, and visual and recreation resources. Since the area has a high development potential for oil and gas resources, some specific guidance for oil and gas development is provided here. Presently, leasing of unleased parcels and future parcels that may become available for lease would be contingent upon completing a comprehensive management plan encompassing the Steamboat Mountain and Greater Sand Dunes areas. The management plan would identify feasible access, allowable road densities, guidelines for development of other minerals, and how much and what type of development would be acceptable.

Unleased areas may be offered for lease with the NSO stipulation or, if the interior areas are too large, may not be leased. These NSO areas may only be accessed through directional drilling. The NSO stipulation would be used to facilitate drainage, under the assumption that industry is the best judge of whether technology would enable them to access the oil and gas resources under the terms of the lease.

Leasing with an NSO stipulation could become necessary for several reasons. First, the area is characterized by steep slopes with streams and riparian zones filling the valley bottoms. Any disturbance on the steep slopes or in the riparian zones threatens the habitat directly. Likelihood of success in producing gas is high which means production facilities would be necessary and year-round access could be required which appears to make seasonal wildlife stipulations inadequate mitigation and other mitigation is therefore necessary. Mitigation would apply to all surface disturbing activities, not just oil and gas activity.

Any requests for relief from these guidelines would require a plan amendment. The plan amendment would generally be initiated in conjunction with an environmental analysis on the action being considered.

Off-road vehicle use and access may not be feasible for much of the area. Access may be limited by low road densities, necessary to achieve area management objectives. To prevent conflicts with big game, recreation users, and other resources, alternative access methods may be needed (use of existing roads, pads, helicopters, etc).

Since some of the area is already leased for oil and gas, development would occur to some extent. All drilling applications would require a plan of development to ensure no undue degradation would occur to the elk herd or unique habitat areas. The plan would cover such things as transportation, pad density, and operations after well completion. Transportation plans would minimize fragmentation of habitats by limiting roads, access, and use. Remote control operations would also be required to accomplish this. Centralizing locations for condensate would also be required to limit trips into well locations, especially during parturition and crucial winter periods. To minimize effects to habitat, all associated linear facilities would be aboveground.

Although a protective withdrawal for locatable minerals would not be pursued at this time, should a withdrawal become necessary, it would be pursued accordingly. Any determination to close parts of the area to mineral location and pursue withdrawals would be deferred to completion of a comprehensive activity or implementation plan for the area. In the interim, those parts of the area not covered by existing withdrawals would remain open to mineral location and a plan of operations would be required for any locatable mineral activity. Any plan of operations submitted by a mining claimant must address the impacts of mining on the Steamboat elk and deer herds to ensure no unnecessary or undue degradation would occur. A site specific environmental analysis would be required on each action. The area would be closed to mineral material sales and to other surface disturbing activities if they do not conform with area objectives until the comprehensive activity or implementation plan is developed which would identify if and where these activities could occur within the area.

Approximately 9,810 acres of coal potential area occurs within the Steamboat Mountain area. Subsurface mining only for coal would be allowed with a plan of development ensuring adequate measures would be taken to protect and maintain the elk herd. Surface facilities relating to subsurface mining would be considered on a case-by-case basis.

The area would be open to actions that would enhance management objectives including to consideration of such activities as fencing, interpretive signs, or construction of barriers.

Linear rights-of-way and geophysical activities would be allowed if impacts to the elk and the unique habitats could be mitigated (Table 2-4). Communication sites would not be allowed.

Off-road vehicle travel would be limited to designated roads and trails, and transportation planning would be completed. The May 10-July 1 seasonal closure for off-road vehicle travel would remain in effect.

All activities would be managed consistent with the Class II and Class III visual resource management classification and all management actions would be designed and located to blend into the natural landscape and to not be visually apparent to the casual viewer.

The unique geological and ecological features in the area would be protected by limiting or prohibiting intrusions and facilities, and by providing public interpretation of these features.

Vegetation management would be designed to maintain, preserve, or enhance biological diversity while providing big game forage and cover requirements. Fire activities would be designed to meet these objectives. Management of conifer communities would be limited to activities designed to control insects and disease. Dead standing trees would be managed under the "Animal Inn" program to help maintain biological diversity. Reseeding and reforestation within the area would be done with native species. Shrub species would be included in all seed mixes.

Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

Any additional forage that becomes available would be allocated for wildlife use to improve quality and quantity of forage.

An overlapping area of elk crucial wintering and parturition areas within the elk herd unit (27,000 acres) outside and adjacent to the Steamboat Mountain area (Map A) would be managed to allow for progressive development of one or two areas at a time. Satisfactory abandonment and reclamation of an area or field would be required prior to developing another area.

The BLM-administered public lands in the Steamboat Mountain area were found to meet the ACEC relevance and importance criteria. See Appendix 1-3 for a summary of the applicable criteria and Chapter 3 for a more detailed description of the resource values found in the area. Therefore, the 43,270 acres of BLM-administered public lands in the Steamboat Mountain area would be designated an ACEC.

White Mountain Petroglyphs ACEC (20 acres of BLM-administered public lands)

Management Objective: The management objective of the White Mountain Petroglyphs ACEC would be to protect cultural resource values from degradation, and provide for wildlife and scenic values, and Native American concerns.

Management Actions: The ACEC would be open for consideration of such activities as fencing, interpretive signs, or construction or placement of barriers to ensure protection of the site. Public awareness and use of the area as an educational site would be encouraged.

The area would be closed to surface disturbing activities (see Glossary) that could adversely affect the resource values in the area (Table 2-8 and Table 2-4); to the location of mining claims (and the existing withdrawal would be retained) (Table 2-6); to mineral material sales for sand, gravel, or other types of construction or building materials; and to the use of explosives and blasting. The area would also be closed to off-road vehicle travel including vehicles used for geophysical exploration activities (Table 2-14) and to the use of fire retardant chemicals containing dyes.

The area would be managed consistent with the Class IV visual resource management classification. Management actions on the lands classified as Class IV lands would be designed to partially retain the existing character of the landscape.

Lands visible within ½ mile radius of the rock art site (vista) would be open for consideration of such activities as fencing, interpretive signs, or construction and placement of trail and off-road vehicle barriers to ensure protection to the sites. Most surface disturbing activities visible within the vista would not be allowed (Table 2-8 and Table 2-4). Some activities within ½ mile of the rock art but not visible from the panels would be allowed. Vibroseis activities would not be allowed within 300 feet of the rock art site. Other kinds of activities, such as audible disturbances would not be allowed if they adversely affected the sacred Native American religious values at the rock art sites.

Off-road vehicle travel, including vehicles used for geophysical exploration and fire suppression activities within the vista area, would be limited to designated roads and trails (Table 2-14).

Human activity, recreation use, etc., would be restricted from February 1 through July 31 to protect nesting raptors. Exception from this restriction may be approved if conditions described in Appendix 7-1) apply.

Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

The BLM-administered public lands in the White Mountain Petroglyphs area meet the ACEC relevance and importance criteria. See Appendix 1-3 for a summary of the applicable criteria and Chapter 3 for a more detailed description of the resource values in the area. Therefore, the ACEC designation for the 20 acres of BLM-administered public lands in the White Mountain Petroglyphs area would be retained.

Other Management Areas

Monument Valley Management Area (69,940 acres of BLM-administered public lands)

Management Objective: The management objective for the Monument Valley area would be to provide protection of wildlife, geologic, cultural, watershed, scenic, and scientific values (paleontological and cultural).

Management Actions: A portion of the Monument Valley area overlaps parts of the Adobe Town Wilderness Study Area. Wilderness management, recommendations, and alternatives for this area are addressed in the Final Adobe Town-Ferris Mountain Wilderness EIS.

The area would be open to: 1) consideration for mineral leasing, exploration, and development provided mitigation could be applied to retain the resource values (Table 2-9 and Table 2-8); 2) consideration for mineral material sales with the same constraints applied to all surface disturbing activities; and 3) development and public use with necessary consideration for wildlife, raptors, cultural, watershed, and scientific values.

The area would be a priority for future cultural and paleontological inventory. A paleontological survey would be required prior to surface disturbing activities. The standard Section 106 compliance process would apply for cultural resource management. The oil shale withdrawal would remain in effect until a comprehensive study was completed for the area and, if necessary, lands could be identified to be withdrawn for protection of their scientific or other resource values.

Surface disturbing activities (see Glossary) including rights-of-way would be managed to avoid slopes greater than 25 percent and highly erosive areas unless a plan can be developed to mitigate adverse affects to the resource values.

Off-road vehicle travel would be limited to designated roads and trails. A transportation/road plan would be prepared to manage public use of the area and to keep the miles of roads and trails to a minimum.

The entire area would be managed consistent with the Class II visual resource management classification and all management actions would be designed and located to blend into the natural landscape and to not be visually apparent to the casual viewer. No new recreation sites would be developed and limited interpretive signing would be accomplished (mostly for roads and access routes).

Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives of this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

Construction of wild horse traps and range improvements would be allowed provided the management objectives of the area could be met. Areas with highly erosive soils or slopes would not be suitable for wild horse traps and range improvements. Improvements would be considered with protection provided for slopes, raptors, cultural, scientific, scenic, and watershed resources.

Although the Monument Valley area has some of the most unique scenic features in the entire resource area, and has the apparent high potential for significant cultural and paleontological resources, there has been little systematic inventory of those values. This lack of information precludes identification of specific resources that meet the ACEC relevance and importance criteria for designation of ACECs. Rather than considering ACEC designation at this time without a more complete appreciation of the values in the area and appropriate management prescriptions, the area would be targeted for additional cultural and paleontological inventory. If specific resources are identified that meet the relevance and importance criteria, the area would then be considered for designation as an ACEC. Further public input would be solicited at that time.

Pine Mountain Management Area (64,200 acres of BLM-administered public lands)

Management Objectives: The management objectives for the area would be to: 1) improve watershed condition and enhance watershed values; 2) improve riparian areas to proper functioning condition, as a minimum; 3) provide opportunities for dispersed recreation uses in the area consistent with the primary watershed, riparian, and wildlife objectives; 4) maintain and protect important wildlife habitat, especially raptor habitat; and 5) reduce erosion.

Management Actions: The Pine Mountain area would be managed as an avoidance area for rights-of-way and surface disturbing activities (Table 2-8 and Table 2-4).

The area would be open to mineral leasing and related exploration and development activities with appropriate mitigation requirements (controlled surface use) applied to protect all other resource values.

The area would be open to consideration of such activities as fencing, interpretive signs, transportation or other use barriers, and sediment or erosion control structures to meet resource management objectives.

Any actions to be conducted in Pine Mountain would be considered and analyzed on a case-by-case basis. Controls may be placed on the amount, sequence, timing, or level of activity or development that may occur to assure that the actions would be consistent with or help to meet the management objectives for the area. This may result in such things as limiting the number of roads and other construction or other surface-disturbing activities (such as well pads) or deferring activities or development in some areas until other areas have been reclaimed and restored to previous uses (Appendix 5-2).

Livestock grazing objectives would be re-evaluated and, as needed, modified to be consistent with the watershed, water quality, fisheries, recreation, and riparian management objectives. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

Reintroduction of Colorado River cutthroat trout and other native species would be considered on a case-by-case basis, if consistent with watershed and riparian objectives.

Any activity that would preclude the achievement of proper functioning condition of uplands and riparian areas, and achievement of other management objectives would not be allowed.

Forested areas would be managed primarily toward meeting the watershed, riparian, wildlife, and recreation objectives for the area. Timber harvest levels and logging practices would be designed to help meet those objectives.

Although big game habitat should improve through the proposed management of the area, any increase in vegetative production would be reserved for watershed stabilization and improvement purposes.

Management of habitat for special status species, if identified, would be developed on a case-by-case basis.

Travel and transportation of firefighting equipment would be limited to designated roads and trails. Use of heavy equipment would be prohibited in areas closed to surface disturbing activities. Fire management, suppression needs, and prescribed burning in timber stands would be determined on a case-by-case basis to ensure timber stands are maintained in health condition and the "snowfence effect" is preserved. Fire management in other areas would be determined on a case-by-case basis to ensure that area objectives would be met.

Aquifer recharge zones in the area would be managed to protect groundwater quality. Protection includes limiting road density, surface disturbing activities, and surface occupancy in identified recharge zones in order to maintain them in a healthy and functioning condition.

Vegetation treatments would be designed to help meet and be consistent with all management objectives for the area. Treatments in the inner gorge of intermittent and ephemeral drainages would be designed to leave mosaic patterns of treated and untreated areas of vegetation.

Herbicide loading sites would be located at least 500 feet from surface water or riparian areas (whichever is greater). Herbicide treatment of noxious weeds on BLM-administered public lands would first require a site specific analysis to help determine whether or not such actions would be authorized.

The entire area would be managed consistent with the Class III visual resource management classification.

Camping would be allowed within 200 feet of water if damage to watershed, water quality, and wildlife values can be avoided. Otherwise, camping would be located at further distances from water. Recreation developments would be kept to a minimum and designed primarily for the protection of resource values and the prevention of resource damage, and for public health and safety.

Off-road vehicle use would be limited to designated roads and trails, and transportation plans would be completed. Some existing roads and trails in the area may be closed and reclaimed as a result of transportation planning. Transportation planning would include consideration of proper road location, construction, reconstruction, design, and reclamation. New road construction would be reviewed on a case-by-case basis for conformance with area and transportation plan objectives. In some cases, consideration of a "no net gain in roads" factor may be an effective way to help meet objectives in the area.

Management Actions Unique to the Four J Basin Portion

In order to meet management objectives, occupancy and surface disturbance on BLM-administered public lands would be severely limited or not allowed. No surface occupancy would be allowed on the escarpment or toe slopes. Due to the highly erosive nature of these soils, all surface disturbing activities should be designed for zero runoff into the established drainages. Mineral leasing would be allowed provided management objectives could be met and logical areas found for placement of access facilities. Livestock grazing would be managed to allow for optimum vegetation recovery and for uplands and riparian areas to reach proper functioning condition as a minimum. If necessary, forage would be reserved for watershed purposes. Full consideration would be given to wildlife habitat needs. Any determinations to close parts of the area to mineral location and pursue withdrawals would be deferred to completion of a comprehensive activity or implementation plan for the area. In the interim, those parts of the area not covered by existing withdrawals would remain open to mineral location.

Human activity, recreation use, etc. would be restricted from February 1 through July 31, where needed, to protect nesting raptors. Exception from this restriction may be approved if conditions described in Appendix 7-1 apply.

The Pine Mountain management area was not recommended as part of the proposed Greater Red Creek ACEC because although the watershed resources in this area are interconnected with that of Greater Red Creek, Pine Mountain does not contain the same sensitivity of resources found in Greater Red Creek. The area does not contain populations of the Colorado River cutthroat trout that the Greater Red Creek area has and thus would not need to receive the same management emphasis. However, the area would be maintained as a geographic unit.

Red Desert Watershed Management Area (341,060 acres of BLM-administered public lands)

Management Objective: The management objective for the Red Desert Watershed Area would be to provide large areas of unobstructed views for enjoyment of scenic qualities. This would be accomplished through facility design and placement and using topography to shield activities, using neutral colors so facilities blend with the landscape, identification of backcountry byways, and providing viewing points for the public (Map A).

Management Actions: The boundary that would be considered the Red Desert Watershed Area would include BLM-administered public lands north of the checkerboard boundary within the Great Divide Basin.

A portion of the Red Desert Watershed Area encompasses portions of six WSAs (Alkali Draw, Alkali Basin-East Sand Dunes, Honeycomb Buttes, Oregon Buttes, Red Lake, and South Pinnacles). Wilderness management recommendations and alternatives are addressed in the Rock Springs District Wilderness Final EIS. The Resource Management Plan would not address wilderness recommendations or management prescriptions for the WSAs. The wilderness study area acreage would not be identified for specific management unless the management is more stringent than either the interim management policy or wilderness management.

The Red Desert watershed area would be managed to ensure developments and activities conform with the concepts of open space. The area would be managed consistent with the Class II and Class III visual resource management classifications. Site specific visual resource reviews (inventories) would be conducted prior to allowing activities that may affect these values.

Surface disturbing activities, mineral exploration and development, and seismic activities would continue where acceptable subject to the management guidelines provided in the Minerals section.

Approximately 2,500 acres would be closed to surface disturbing activities to protect special status plant species and relevant and important resource values in ACECs (Table 2-8). Seasonal restrictions for protection of raptors, big game crucial winter range, and calving/fawning areas would be managed as shown in Table 2-9. The exception criteria described in Appendix 7-1 would apply.

Approximately 2,860 acres in the coal potential area could be developed for coal (see Coal Decisions). Most of the area would be open to consideration for salable minerals activities and mineral location. The existing coal and stock driveway withdrawals would be revoked.

About 5,260 acres would be closed to mineral location and salable mineral activity, to protect features in the South Pass Historic area (see the South Pass Historic Landscape Section).

The preferred route for rights-of-way would be the east-west window described in the Lands and Realty Management section. Other areas would be considered if in conformance with wildlife, watershed, cultural, and scenic resource objectives (see Table 2-4). Overhead powerlines would not be permitted.

Off-road vehicle travel would be managed to provide access opportunities in conformance with other resource objectives. Approximately 95,580 acres would be closed to ORV use, and the remainder of the area would be limited to designated roads and trails. Recreational activities, opportunities, and uses would be maintained. A Tri-Territory Loop and Red Desert backcountry byway would be established.

Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

Forage would continue to be provided for wild horses in the area. Wild horse management in the area would be consistent with the Divide Basin Wild Horse Management Plan and the management objectives for the area. Vegetation resources would be managed for continued livestock grazing and wildlife uses in accordance with the management objectives for those resource values.

Special status plant species, the relevant and important resource values in the Oregon Buttes ACEC, and cultural resource sites such as the South Pass Historic Landscape would be protected. Specific management prescriptions for those areas may be found in the particular special management area section of this document.

The Red Desert Watershed area was not found to contain values that met the relevance and importance criteria and therefore would not be recommended for ACEC designation.

Sugarloaf Basin Management Area (85,880 acres of BLM-administered public lands)

Management Objectives: The management objectives for the area would be to: 1) improve watershed condition and enhance watershed values; 2) improve riparian areas to proper functioning condition, as a minimum; 3) provide opportunities for dispersed recreation uses in the area consistent with the primary watershed, riparian, and wildlife objectives; and 4) maintain and protect important wildlife habitat.

Management Actions: The Sugarloaf Basin area would be managed as an avoidance area for rights-of-way and surface disturbing activities (Table 2-8 and Table 2-4). However, a north-south right-of-way window, parallel to the east side of the Flaming Gorge National Recreation Area, would be established.

The area would be open to mineral leasing and related exploration and development activities with appropriate mitigation requirements applied to protect all other resource values.

The area would be open to consideration of such activities as fencing, interpretive signs, construction of placement of transportation barriers, and sediment or erosion control structures to meet resource management objectives.

Any proposed actions to be conducted in the Sugarloaf Basin area would be considered and analyzed on a case-by-case basis. Controls may be placed on the amount, sequence, timing, or level of activity or development that may occur to assure that the actions would be consistent with or help to meet the management objectives for the area. This may result in such things as limiting the number of roads and other construction or other surface-disturbing activities (such as well pads) or deferring activities or development in some areas until other areas have been reclaimed and restored to previous uses (Appendix 5-2).

Livestock grazing objectives would be re-evaluated and, as needed, modified to be consistent with the watershed, water quality, fisheries, recreation, and riparian management objectives. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).

Any activity that would preclude the achievement of proper functioning condition of uplands and riparian areas and achievement of other management objectives would not be allowed.

Forested areas would be managed primarily toward meeting the watershed, riparian, wildlife, and recreation objectives for the area. Timber harvest levels and logging practices would be designed to help meet those objectives.

Although big game habitat should improve through the proposed management of the area, any increase in vegetative production would be reserved for watershed stabilization and improvement purposes.

Management of habitat or special status species, if identified, would be developed on a case-by-case basis.

Travel and transportation of firefighting equipment would be limited to designated roads and trails. Fire management, suppression needs, and prescribed burning in timber stands would be evaluated on a case-by-case basis to ensure timber stands are maintained in healthy condition and the "snowfence effect" is preserved. Fire in other areas would be evaluated on a case-by-case basis to ensure that area objectives would be met.

Aquifer recharge zones in the area would be managed to protect groundwater quality. Protection includes limiting road density, surface disturbing activities, and surface occupancy in identified recharge zones in order to maintain them in a healthy and functioning condition.

Vegetation treatments would be designed to help meet and be consistent with all management objectives for the area. Treatments in the inner gorge of intermittent and ephemeral drainages would be designed to leave mosaic patterns of treated and untreated areas of vegetation.

Herbicide loading sites would be located at least 500 feet from surface water or riparian areas (whichever is greater). Herbicide treatment of noxious weeds on BLM-administered public lands would first require a site specific analysis to help determine whether or not such actions would be authorized.

The area would be managed consistent with the Class II and Class III visual resource management classifications.

Camping would be allowed within 200 feet of water if damage to watershed, water quality, and wildlife values can be avoided. Otherwise, camping would be located at further distances from surface water. Recreation developments would be kept to a minimum and designed primarily for the protection of resource values and the prevention of resource damage, and for public health and safety.

Off-road vehicle use would be limited to designated roads and trails, and a transportation plan would be completed. Some existing roads and trails in the area may be closed and reclaimed as a result of transportation planning. Transportation planning would include consideration of proper road location, construction, reconstruction, design, and reclamation. New road construction would be reviewed on a case-by-case basis for conformance with area and transportation plan objectives. In some cases, consideration of a "no net gain in roads" factor may be an effective way to help meet objectives in the area.

The Sugarloaf Basin area was not recommended as part of the proposed Greater Red Creek ACEC because although the watershed resources in the are interconnected with that of Greater Red Creek, Sugarloaf Basin does not contain the same sensitivity of resources found in Greater Red Creek. The area does not contain populations of the Colorado River cutthroat trout that the Greater Red Creek area has and thus would not need to receive the same management emphasis. The watershed, scenic, and wildlife resources were determined not to be more than locally significant, nor fragile, sensitive, or rare when compared to those values found in Currant, Sage, and Red Creeks.

Wild and Scenic Rivers Management on BLM-Administered Public Lands

Management Objective: The management objective would be to manage BLM-administered public lands that meet the wild and scenic rivers suitability factors to maintain or enhance their outstandingly remarkable values and wild and scenic rivers classifications, until Congress considers them for possible designation.

Seven BLM-administered land parcels along the Sweetwater River (involving about 9.7 miles of the river) were found to meet the wild and scenic rivers suitability factors to be given further consideration for inclusion in the Wild and Scenic Rivers System (Map 30). Of the 9.7 miles of river involved, the BLM lands along 5.8 miles are classified as wild, the BLM lands along 3.3 miles are classified as scenic, and the BLM lands along 0.6 miles are classified as recreational (Map 30) (see Appendix 4-3).

In conducting the wild and scenic rivers review process, application of the wild and scenic rivers eligibility criteria, determining the tentative wild and scenic rivers classifications, and the application of the wild and scenic rivers suitability factors, focused on the BLM-administered public lands (hereafter called BLM lands) within a ½ mile wide corridor along the review segment of the river (i.e., approximately ¼ mile wide along each bank of the river along the length of the review segment). The public lands within and adjacent to this corridor (identified on Map 30) would be considered in future site specific, activity or management implementation planning to fulfill the stated management objective.

Interim Management, on the BLM-Administered Public Land Parcels, Identified as Meeting the Wild Classification (involving 5.8 miles of the river) would focus on maintaining or enhancing the outstandingly remarkable historic, scenic, and recreational values and maintaining the relatively primitive, pristine, rugged, and unaltered character of the area. Any activities that would conflict with this objective and any physical or visual intrusions on the BLM lands involved would be prohibited.

Temporary cultural and paleontology activities (e.g., recordation, sampling, testing, stabilization, rehabilitation, and reconstruction) may be allowed on the BLM lands, if the outstandingly remarkable values are maintained and if no permanent adverse impacts would occur to either the BLM lands directly involved or any other lands within or adjacent to the corridor.

The BLM lands would be closed to mineral leasing and related exploration and development activities. Existing mineral leases on these lands would be allowed to expire.

The BLM lands would be closed to new mineral location actions (e.g., filing of mining claims and related exploration and development). A withdrawal from mineral location would be pursued. Valid existing rights (existing mining claims) would be recognized.

The BLM lands would be closed to recreational dredging for minerals, such as gold, and to mineral material sales.

Geophysical exploration would be limited to foot access and use of surface cables on the BLM lands (use of motorized or non-motorized vehicles would be prohibited). Surface charges may be allowed if site specific analyses determine no permanent adverse impacts would occur.

The BLM lands would be closed to land disposal actions. Exchanges of BLM lands "outside the corridor" could be considered for acquiring private or state lands within the corridor or between the BLM land parcels along the river; however, BLM lands within the corridor would not be exchanged.

The BLM lands would be closed to surface disturbing activities such as construction of recreational developments (e.g., new campgrounds, put-in or take-out areas, or other such facilities), wildlife habitat improvements, range improvements, rights-of-way, mineral development, etc. Hiking trails may be built, "by hand labor", if there would be a demand for them and they conform with the management objective for these lands.

The BLM lands would be an exclusion area for rights-of-way.

Water impoundments or diversions would be prohibited on the BLM lands.

The BLM lands would be closed to motorized and non-motorized vehicles. Hikers would be required to "pack it out"; there would be no garbage facilities. Campfires would be permitted in keeping with current fire management regulations.

Any Fire suppression activities on the BLM lands would use "light-on-the-land" techniques. No motorized or non-motorized vehicle ground equipment would be used to suppress fires. Helicopter bucket drops and the use of chainsaws may be allowed if no permanent impacts would occur.

The BLM lands would be closed to commercial timber sales and harvesting. Cutting of trees would only be allowed with written permission or in association with safety and environmental protection requirements (such as clearing trails, visitor safety, and fire control).

Increases in active grazing preference and construction of new range improvements on the BLM lands would be prohibited.

The BLM lands would be closed to vegetation treatment or manipulation , by other than hand or aerial seeding methods using species that will restore natural vegetation. Undesirable and exotic species could be removed by hand.

The BLM lands would be managed under a Class II VRM classification.

Interim Management, on BLM-Administered Public Land Parcels, Identified as Potentially Meeting the Scenic Classification

(involving 3.3 miles of river) would focus on maintaining or enhancing the outstandingly remarkable historic, scenic, and recreational values and the relatively unmodified character of the area in a near-natural setting. Any activities that would conflict with this objective would be prohibited. Some intrusions on the BLM lands involved may be allowed if they were not readily evident or that are short lived, and would not adversely affect maintaining the scenic classification.

Temporary cultural and paleontology activities (e.g., recordation, sampling, testing, stabilization, rehabilitation, and reconstruction) may be allowed on the BLM lands, if the outstandingly remarkable values are maintained and if no permanent adverse impacts would occur to either the BLM lands directly involved or any other lands within or adjacent to the corridor.

The BLM lands would be closed to mineral leasing and related exploration and development activities. Existing mineral leases on these lands would be allowed to expire.

The BLM lands would be closed to new mineral location actions (e.g., filing of mining claims and related exploration and development). A withdrawal from mineral location would be pursued. Valid existing rights (existing mining claims) would be recognized.

The BLM lands would be closed to recreational dredging for minerals such as gold and to mineral material sales.

Geophysical exploration would be allowed if a site specific analysis determines no adverse affects would occur. Vehicles would use designated roads and trails only. Foot access would be required off of existing roads. Surface charges may be allowed if site specific analyses determine no permanent adverse impacts would occur.

The BLM lands would be closed to land disposal actions. Exchanges of BLM lands "outside the corridor" could be considered for acquiring private or state lands within the corridor or between the BLM land parcels along the river; however, BLM lands within the corridor would not be exchanged.

The BLM lands would be closed to most surface disturbing activities such as construction of rights-of-way, mineral development, and most types of recreation site development, and wildlife habitat and range improvements. Some recreation (such as put in or take out areas), wildlife, and range improvement development may occur on the BLM lands so long as there is not a substantial adverse effect to the natural-like appearance of all the lands within the river corridor and their immediate environment.

Water impoundments or diversions would be prohibited on the BLM lands.

The BLM lands would be an exclusion area for rights-of-way.

Motorized and non-motorized vehicles would be restricted to using designated roads and trails. Hiking trails may be built if there would be a demand for them and they conform with the objective for the scenic classification. Mountain biking would be allowed to the extent that no adverse affects would occur. Hikers would be required to "pack it out"; there would be no garbage facilities. Campfires would be permitted in keeping with current fire management regulations.

Any Fire suppression activities on the BLM lands would use "light-on-the-land" techniques. No motorized or non-motorized vehicle ground equipment off of designated roads and trails would be used to suppress fires. Helicopter bucket drops and the use of chainsaws may be allowed if no permanent impacts would occur.

The BLM lands would be closed to commercial timber sales and harvesting. Cutting of trees would only be allowed with written permission or in association with safety and environmental protection requirements (such as clearing trails, visitor safety, and fire control).

Increases in active grazing preference on the BLM lands would be prohibited. Range improvements would only be allowed if they were compatible with objectives for the scenic river classification.

The BLM lands would be closed to vegetation treatment or manipulation , by other than hand or aerial seeding methods using species that will restore natural vegetation. Undesirable and exotic species could be removed by hand.

The BLM lands would be managed under a Class II VRM classification.

Interim Management, on BLM-Administered Public Land Parcels, Identified as Potentially Meeting the Recreational Classification (involving 0.6 miles of river) would focus on maintaining or enhancing the outstandingly remarkable historic, scenic, and recreational values in a modestly modified setting and retain the character of the area. Any activities that would conflict with this objective would be prohibited. Some intrusions may be allowed if they would not adversely affect the characteristics of the area and the maintenance of the recreational classification.

Temporary cultural and paleontology activities (e.g., recordation, sampling, testing, stabilization, rehabilitation, and reconstruction) may be allowed on the BLM lands, if the outstandingly remarkable values are maintained and if no permanent adverse impacts would occur to either the BLM lands directly involved or any other lands within or adjacent to the corridor.

The BLM lands would be closed to mineral leasing and related exploration and development activities. Existing mineral leases on these lands would be allowed to expire.

The BLM lands would be closed to new mineral location actions (e.g., filing of mining claims and related exploration and development). A withdrawal from mineral location would be pursued. Valid existing rights (existing mining claims) would be recognized.

The BLM lands would be closed to recreational dredging for minerals, such as gold, and to mineral material sales.

Geophysical exploration would be allowed if a site specific analysis determines no adverse affects would occur. Vehicles would use designated roads and trails only. Foot access would be required off of existing roads. Surface charges may be allowed if site specific analyses determine no permanent adverse impacts would occur.

The BLM lands would be closed to land disposal actions. Exchanges of BLM lands "outside the corridor" could be considered for acquiring private or state lands within the corridor or between the BLM land parcels along the river; however, BLM lands within the corridor would not be exchanged.

The BLM lands would be closed to most surface disturbing activities such as construction of rights-of-way and mineral development. Some surface disturbing activities such as recreational developments (development of, and improvement of existing campgrounds, put in or take out areas, etc.), range improvements, and wildlife improvements, provided such activity is done in a manner that minimizes surface disturbance, sedimentation, pollution, and visual impairment, and if a site specific analysis determines that no adverse affects would occur.

Water impoundments or diversions would be prohibited on the BLM lands.

The BLM lands would be an exclusion area for rights-of-way.

Motorized and non-motorized vehicles would be restricted to

using designated roads and trails. Hiking trails may be built if there would be a demand for them and they conform with the objective for the recreational classification. Mountain biking would be allowed to the extent that no adverse affects would occur. Campfires would be permitted in keeping with current fire management regulations. Public use and access may be regulated and distributed where necessary to protect and enhance outstandingly remarkable values.

Fires would be suppressed using appropriate techniques provided no permanent impacts would occur. Motorized and non-motorized vehicle ground equipment on designated roads and trails, the use of chainsaws, and helicopter bucket drops may be used to suppress fires.

The BLM lands would be closed to commercial timber sales and harvesting. Firewood collection for camp fires and some post and pole cutting would be allowed provided no substantial adverse effects would occur to the BLM lands.

Increases in active grazing preference would be prohibited. Range improvements would only be allowed if they would be compatible with the objective for recreational river classification.

The BLM lands would be closed to vegetation treatment or manipulation , by other than hand or aerial seeding methods using species that will restore natural vegetation. Undesirable and exotic species could be removed by hand.

The BLM lands would be managed under a Class II VRM classification.

The portion of the Green River administered by BLM did not meet the suitability criteria based upon the inability of the BLM to manage the area because of lack of jurisdiction. However, it would be recommended that a cooperative study between BLM, BOR, and USFWS be conducted to determine eligibility and suitability. BLM would cooperate on the formation and management of a greenbelt area.

TABLE 2-1

SUMMARY COMPARISON OF ALTERNATIVES

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
AIR QUALITY MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVE: To maintain or enhance air quality and to protect public health, safety, and sensitive resources.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: Special requirements would be applied on a case-by-case basis to avoid or alleviate air quality problems. Special requirements could include limiting emissions, restricted spacing of project locations, and covering conveyors.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Industrial plant facilities would be located where established pre-site air quality standards can be maintained or enhanced, and where they would not cause hazardous heavy fog conditions. Of particular concern would be any actions which could affect the Flaming Gorge National Recreation Area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	BLM would coordinate with Wyoming DEQ and EPA on air quality standards and regulations that could affect BLM managed activities.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	BLM would coordinate with Wyoming DEQ and EPA on the development of visibility standards and guidelines.	No similar action.	No similar action.	Same as Proposed.
	BLM would coordinate and cooperate with USFS, DEQ, and EPA on monitoring and collecting of air quality data (see Table 5-4).	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
AIR QUALITY MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	All construction and surface disturbing activities would be designed with dust control measures to reduce general air quality impacts and visibility impacts.	Same as Proposed.	Same as Proposed.	Same as Proposed.
CULTURAL AND PALEONTOLOGICAL RESOURCES MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVE: To protect and preserve important cultural and paleontological resource values or their historic record, and to avoid or resolve conflicts with other resource values and land use activities; and to expand opportunities for scientific and educational uses of these resources.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Cultural Resources	MANAGEMENT ACTIONS: Any sites, including those eligible for listing or that are listed on the NRHP would be managed on a case-by-case basis according to their values. Investigations of violations of the Archeological Resources Protection Act would be conducted. Efforts to interpret cultural resources would be increased.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Historic Trails General Guidance	The management guidelines contained in the Oregon/Mormon Pioneer National Historic Trails Management Plan would be used as appropriate in developing and implementing site specific management prescriptions for NRHP eligible or listed trails and associated cultural sites (this plan is also referred to as the Historic Trails Plan).	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Historic Trails General Guidance (continued)	Heavy equipment may be driven on trails providing a site specific analysis indicates trail values would not be adversely affected. Geophysical shot-holes and vibroseis locations could occur provided activities generally occur 300 feet from trails. Trails would not be used as industrial access roads. Blading of historic trails would not be allowed unless necessary to protect life or property.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Areas within 1/4 mile or the visual horizon, whichever is closer, of historic trail segments that contribute to NRHP eligibility, would be avoidance areas for surface disturbing activities.	Same as Proposed.	Same as Proposed.	Areas within 1/2 mile or the visual horizon, whichever is closer, of historic trail segments that contribute to NRHP eligibility, would be avoidance areas for surface disturbing activities.
	Surface disturbing activities would be prohibited on two Overland Trail stage station sites. These sites would also be closed to mineral location and a withdrawal would be pursued.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Congressionally Designated Historic Trails and Sites	Congressionally designated historic trails and sites would be managed to protect their integrity and historic values by limiting off-road vehicle use, surface use, and visual intrusions on or within a 1/4 mile or the visual horizon, whichever is closer, of the trail (Map 5).	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Congressionally Designated Historic Trails and Sites (continued)	The management guidelines contained in the Oregon/Mormon Pioneer National Historic Trails Management Plan would be used in developing and implementing site specific management prescriptions for the Oregon, Mormon Pioneer, Pony Express, and California Historic Trails and associated cultural sites (this plan is also referred to as the Historic Trails Plan).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The Parting-of-the-Ways site would be an avoidance area for surface disturbing activities. The 40-acre withdrawal from mineral location would remain in effect.	Same as Proposed.	The 40-acre withdrawal from mineral location would be terminated. All other management actions would be the same as the Proposed Plan.	Same as Proposed.
	Surface disturbing activities would be prohibited on the 1-mile segment of the Oregon Trail known as The Dry Sandy Swales.	Same as Proposed.	Surface disturbing activities would be allowed, except within the immediate area of the swales site (20 acres).	Surface disturbing activities would be prohibited within 1/4 mile or the visual horizon, whichever is closer, on the 1-mile segment of the Oregon Trail known as the Dry Sandy Swales.
Expansion Era Historic Roads	The management guidelines contained in the BLM Comprehensive National Historic Trail Management Plan would be used as appropriate in developing and implementing site specific management prescriptions for about 800 miles of expansion era historic roads and related cultural sites (about 8 sites). Prescriptions would be similar to the Historic Trails Plan, but the 1/4 mile protective corridor would not necessarily apply.	Same as Proposed.	The management guidelines contained in the BLM Comprehensive National Historic Trail Management Plan would be used as appropriate in developing and implementing site specific management prescriptions for about 150 miles of expansion era historic roads and related cultural sites (about 8 sites).	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Rock Art Sites	Five significant rock art sites, and their surrounding viewsheds (within 1/2 mile) would be managed to protect their cultural and historic values. Surface disturbing activities and visual intrusions would be prohibited within these areas if they would adversely affect these values.	Five rock art sites would have surface disturbing activities restricted. The surrounding viewsheds would not be managed by any special prescriptions.	Same as Alternative A.	All rock art sites and surrounding areas for 1/2 mile would be closed to surface disturbing activities and visual intrusions that would adversely affect these resources (about 20 sites, 11,000 acres).
	Within these same areas, other kinds of activities, such as audible disturbances, would also be restricted, if they would adversely affect Native American spiritual activities. Site specific cultural activity or implementation plans would be prepared for these sites.	Other activities such as audible disturbances would be managed on a case-by-case basis.	Same as Alternative A.	Same as Alternative A.
	Appropriate management prescriptions would be developed on a case-by-case basis for any other rock art sites and for any significant rock art sites identified in the future.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Other Cultural Sites and Areas	Archeological data would be synthesized in the Little Colorado Desert, Greater Nitchie Gulch, and Wamsutter Arch concentrated oil and gas development areas. Programmatic agreements would be negotiated with the SHPO and ACHP to better manage development and other activities in ways that would avoid sacrificing significant archeological values.	Evaluations for these sites would be conducted on a case-by-case basis, rather than using data synthesis methods. Standard 106 compliance procedures would be applied in these areas, rather than negotiating programmatic agreements.	Same as Proposed.	Same as Alternative A.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Other Cultural Sites and Areas (continued)	Surface disturbing activities would be prohibited in the 10-acre area surrounding the Tri-Territory Marker. The Tri-Territory Marker Area would be closed to mineral location. A withdrawal from mineral location would be pursued.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The three playa lake areas with high cultural site density would be managed as historic districts. Programmatic agreements would be negotiated with SHPO and ACHP for guiding development and other activities that may affect the cultural values in these areas.	Same as Proposed.	Same as Proposed.	Surface disturbing activities would be designed to avoid adverse effects to archaeological sites (about 30,000 acres).
	The Eden-Farson, Finley, Krmpotich, and Morgan archeological sites, and similar sites identified in the future, would be managed to preserve and record their archeological information and scientific values. Site interpretation for these areas would not be developed for public use.	Same as Proposed.	Same as Proposed.	Same as Proposed.
(Human Burial Locations)	Human burial sites would be protected regardless of the ethnic origin. Generally, known burial areas would be protected by prohibiting surface disturbing activities. Coordination and consultation with Native Americans would be conducted to determine appropriate management of Native American burial sites.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
(Prehistoric Quarry Site)	Management emphasis for the prehistoric quarry site would be for scientific data recovery. Only those surface disturbing activities related to data recovery would be allowed. All other types of surface disturbance would be prohibited. The site would be closed to mineral location and a mineral location withdrawal would be pursued.	Same as Proposed.	Same as Proposed.	Same as Proposed.
(North and South Table Mountains [Bozovich Site Complex])	Surface disturbing activities would be prohibited in the area. The management priority and emphasis in the area would be for historic and archaeological scientific study.	Same as Proposed.	The area would be managed as an avoidance area for surface disturbing activities. There would be no management priority or emphasis placed on historic and archaeological scientific study.	Same as Proposed.
Other Cultural Resources and Cultural Program Management Actions	Other cultural sites would be managed on a case-by-case basis according to their resource values.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Coordination and consultation with Native American tribes would be conducted to identify appropriate management prescriptions for areas significant to them for spiritual reasons.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Negotiations for land exchanges and cooperative agreements would be used as a major tool to enhance management of cultural resources.	Negotiations for land exchanges and cooperative agreements would not be a major tool for enhancing management of cultural resources.	Same as Alternative A.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Paleontological Resources	Paleontological resources would be managed to protect their important scientific values. Area closures, restrictions or other mitigation requirements for the protection of paleontological values would be determined on a case-by-case basis.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Collecting of vertebrate fossils by qualified people would be allowed by written authorization only.	Same as Proposed.	Same as Proposed.	Same as Proposed.
FIRE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVE: To use prescribed fire as a management tool to help achieve multiple use resource management goals, and to provide cost-effective protection from wildfire to life, property, and resource values.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: Wildfire suppression or control actions would emphasize fire containment or confinement. Immediate control actions would be used only in cases of arson and threat to public safety, or structural property.	Wildfire suppression or control actions would not be based on containment or confinement strategies. Suppression would emphasize immediate control actions, within the first burning period.	Wildfire suppression or control actions would de-emphasize containment and confinement strategies. Suppression would emphasize immediate control during the first burning period.	Wildfire suppression or control actions would be de-emphasized and containment/confinement would be the focus of the program.
	Suppression actions would be based on achieving the most efficient level (MEL) and allowing historical acres burned to increase on confinement and containment actions.	Suppression actions would be based on achieving initial attack success of suppressing 90% of fires annually.	Same as Alternative A.	Suppression actions would be based on achieving initial attack success of suppressing 70-80% of fires annually.
	Activity plans would be developed for the fire management areas.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Prescribed fire activities would be conducted so that ambient air quality standards would not be violated.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
FIRE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Activities that cause surface disturbance, such as the use of heavy equipment, would be approved on a case-by-case basis.	Same as Proposed although tracked type heavy equipment would be approved on a case-by-case basis. Rubber-tired equipment would be preferred.	Same as Proposed.	Same as Proposed.
	Priority areas for wildfire suppression would be identified in the area fire management activity plans.	Priority areas for wildlife suppression would not be identified. Instead, full suppression of wildfires would occur, especially around populated areas, Hickey, Pine and Little Mountains, Steamboat Mountain conifer communities, and Crookston Ranch.	Same as Proposed.	Same as Proposed.
	Use of chemical fire suppression agents would be prohibited in rock art sites. Generally, use of chemical fire suppression agents would be prohibited in special management areas, unless or until escaped fire situation analyses or activity plans for these areas identify chemical suppression agents as an allowable use.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Wildfires occurring in forested areas would be suppressed as determined by resource values threatened on a case-by-case basis. Wildfires occurring in or threatening a developed or active timber sale would receive priority control suppression action. Non-commercial stands may be included in prescribed fire activities. Standard management practices such as pile and broadcast burning would be permitted in all forested areas.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
FIRE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	A site specific analysis would be prepared for sensitive areas such as special status plant species locations, cultural sites, historic trails, and ACECs to determine the type of fire suppression activity that would be acceptable.	Same as Proposed.	Same as Proposed.	Same as Proposed.
FOREST AND WOODLAND RESOURCE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVES: To provide for healthy forest and woodland ecosystems to primarily meet other multiple resource objectives of improved watershed and soil conditions, improved recreation and wildlife habitat values, maintained or enhanced biological diversity, long-range view of desired plant community concepts at the landscape level, and to provide for production of forest products in balance with these other resource management objectives.	Same as Proposed.	To manage for healthy forest and woodland ecosystems primarily to optimize forest products including fuelwood, and post and pole production while recognizing other resource values and uses, although a balance with these other resource management objectives may not be achieved.	To manage for healthy forest and woodland ecosystems primarily to meet the objectives for improved watershed, improved wildlife habitat, and scenic resource values.
	MANAGEMENT ACTIONS: Timber compartments would be managed as follows: Wind River Front would be a restricted forest management area and managed for commercial values giving consideration to other values. Pine and Little Mountains would be managed to enhance other resource values. Hickey Mountain-Table Mountain would be managed under woodland prescriptions (see Map 6).	Timber compartments would be managed as follows: Hickey Mountain-Table Mountain would be managed under woodland prescriptions. The other compartments would be restricted forest management areas and managed to enhance all resource values.	Timber compartments would be managed as follows: Hickey Mountain-Table Mountain would be managed under woodland prescriptions. The other compartments would be managed intensively for forest values while considering other resource values.	Timber compartments would be managed as follows: Hickey Mountain-Table Mountain would be managed under woodland prescriptions. The other compartments would be managed to enhance or maintain other resource values. Allowable harvest would be determined by the needs of other resources.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Commercial	Commercial and noncommercial forest areas where possible, and within plan objectives, would meet local demand for minor forest products: fuel wood, posts, poles, wildlings and Christmas trees. Permits would be required.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Harvest levels could average 500,000 board feet per year. Priority harvest would be given to mature, decadent, and diseased trees (see Table 2-3).	Harvest levels could average 500,000 to 1,000,000 board feet per year. Priority harvest would be given to mature, decadent, and diseased trees.	Harvest levels could average 1,000,000 board feet per year. Priority harvest would be given to mature, decadent, and diseased trees.	Same as Proposed.
	Harvest activity would be restricted in sensitive wildlife and watershed areas. Surface disturbing actions in support of timber harvesting would not be allowed within 100 feet of drainages.	Same as Proposed.	Harvest activity would be restricted in only minimal wildlife and watershed areas.	Same as Proposed.
	Stand replacement of harvested or denuded areas would be revegetated with tree seedlings within 5 to 15 years.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Slash disposal would be tailored to promote reforestation, minimize erosion and allow game movement.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Clearcuts generally would not exceed 25 acres.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Conifer stands would be managed under the guidelines for wildfire suppression.	Conifer stands would be full fire suppression areas.	Same as Proposed.	Same as Proposed.
Woodland	Woodland forests would be managed to maintain or enhance watershed, recreation, and wildlife habitat values.	Same as Proposed.	The woodland forest type would be managed to emphasize forest products and forest management.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
FOREST AND WOODLAND RESOURCE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS **Woodland** (continued)	Woodlands would be maintained and would not be converted to another vegetation type. Treatment of mature stands would be allowed to improve wildlife habitat and watershed conditions.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Prescribed burning would be conducted in woodland stands to enhance watershed and wildlife values.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Harvesting of cottonwood trees would be prohibited.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Habitat fragmentation would be prevented if it is determined to have a negative ecological effect. Special management areas (old growth, scientific research areas) would be identified and provided appropriate management. Long-term stand structure development would be an integral part of all forest management.	No similar action.	No similar action.	No similar action.
HAZARDOUS MATERIALS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVE: To prevent waste contamination due to any BLM-authorized actions, to minimize federal exposure to the liabilities associated with waste management on public lands and to protect public health and safety.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: For BLM-authorized activities that involve hazardous materials or their use, precautionary measures would be used to guard against releases or spills into the environment.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
HAZARDOUS MATERIALS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Sale or transfer of public lands on which storage or disposal of hazardous substances has been known to occur would require public notification of the type and quantity of these substances.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	If safety hazards are identified as a result of hazardous waste spills on BLM-administered public lands, the BLM would provide appropriate warnings.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	BLM-administered public land sites contaminated with hazardous wastes would be reported, secured, and cleaned up according to applicable federal and state regulations and contingency plans. Parties responsible for contamination would be liable for cleanup and resource damage costs, as prescribed in federal and state regulations.	Same as Proposed.	Same as Proposed.	Same as Proposed.
LANDS AND REALTY MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVE: To support the goals and objectives of other resource programs, to respond to public demand for land use authorizations, and to acquire administrative and public access where necessary.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Land Ownership Adjustment	MANAGEMENT ACTIONS: Disposal of public lands would be considered on a case-by-case basis. The preferred method of disposal would be land exchanges (Map 7).	Same as Proposed (Map 31).	Same as Proposed.	Same as Proposed.
	Consideration would be given for exchanges for State lands in special management areas such as WSAs and ACECs (see Appendix 8-3).	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LANDS AND REALTY MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	Acquisition of lands would be considered to facilitate various resource management objectives.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Land Ownership Adjustment (continued)				
	Suitable lands would be provided to local entities for solid waste disposal through sale or exchange.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Solid waste disposal sites would be transferred by sale or Recreation and Public Purposes Patent if the site does not contain hazardous waste. Any unsold site, or site found to contain hazardous waste would be closed and monitored in accordance with appropriate Wyoming DEQ guidelines.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Preference would be given to Sweetwater County School District #1 for acquisition of the public lands in Lots 3-5, T. 19 N., R. 105 W. (124 acres).	Same as Proposed.	Same as Proposed.	Same as Proposed.
Utility/ Transportation Systems	ROW corridors for utilities and transportation systems would not be identified due to predominate checkerboard private lands.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Public lands would be made available throughout the planning area for rights-of-way, permits, and leases.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LANDS AND REALTY MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS **Utility/ Transportation Systems** (continued)	The ROD and *Federal Register* notice for the RMP would meet the criteria for public notification for linear or site rights-of-way within floodplains as required by BLM Manual 7221, except for those associated with perennial streams. The BLM would solicit public comment on site facilities or major linear rights-of-way along perennial streams unless another agency (federal, state, or local) already had solicited such comments.	Each stream crossing would require public notification as required by BLM Manual 7221.	Same as Proposed.	Same as Proposed.
	The Aspen Mountain Communication Site Plan would govern development of sites at this location. Sites at other locations would be approved on a case-by-case basis. Advocate the sharing of sites where possible.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Major transportation and utility line ROWs would be routed along existing ROW concentration areas, and areas would be identified as utility windows to the extent possible. Five windows would be identified: 2 east-west, 3 north-south. Other areas would be considered for rights-of-way on a case-by-case basis (Map 10).	Similar to Proposed, except only 2 east-west windows would be identified (Map 32).	Similar to Proposed, except the window through Greater Red Creek would include an additional different location under Alternative B (Map 33).	Same as Alternative A.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LANDS AND REALTY MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS **Utility/ Transportation Systems** (continued)	Areas would be designated for avoidance or exclusion to rights-of-way where these uses are incompatible with management of sensitive resources and/or would have unacceptable impacts. Petroglyph sites, special status plant species populations, significant cultural sites, Currant Creek, Greater Red Creek, Natural Corrals, recreation areas, South Pass Historic Landscape, Steamboat Mountain, Big Sandy River wild and scenic river segments, and Wind River Front would be avoidance or exclusion areas for rights-of-way (see Table 2-4, Map 8, and Map 9).	Areas to be designated for avoidance and exclusion to rights-of-way would include petroglyph sites, cultural/historic sites, special status plant species populations, geologic features, recreation sites, Natural Corrals, and Currant Creek (Table 2-4, Map 34, and Map 35).	Areas to be designated for avoidance and exclusion to rights-of-way would include fewer petroglyph sites, cultural sites and geologic features; Natural Corrals; and wild river segments (Table 2-4, Map 36, and Map 37).	Areas to be designated for avoidance and exclusion to rights-of-way would include petroglyph sites, special status plant species and potential habitat, significant cultural sites, Currant Creek, Greater Red Creek, Natural Corrals, recreation areas, Greater South Pass Historic Landscape, Big Sandy River and wild river segments (Table 2-4, Map 38, and Map 39).
Withdrawals/ Classifications	As needed, new withdrawals would be pursued for protection of important resource values (see Table 2-5 and Table 2-6).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Public water reserves would be terminated where no longer needed (21,368 acres) and acquired where the need exists (9,386 acres) (see Map 11 and Map 12).	Public water reserves (about 21,368 acres) would remain in effect and no new water reserves would be added.	Same as Proposed.	Same as Proposed.
	63 acres inundated by Flaming Gorge Reservoir would be withdrawn for the Bureau of Reclamation.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Desert Land Entries	Should an applicant provide evidence of a water right and an acceptable conservation plan, the application for a DLE or lease would be considered on its merits. Otherwise, no public lands would be available for agricultural use under DLE.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LANDS AND REALTY MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS **Desert Land Entries** (continued)	Desert land entries and agricultural leases would be considered only in those areas which meet the Department of Agriculture criteria (Appendix 8-2).	Same as Proposed.	Same as Proposed.	Same as Proposed.
Access	Access to specific areas may be closed or restricted to protect public health and safety and significant resource values (see Table 2-7 and Map 13).	Same as Proposed.	Same as Proposed.	Same as Proposed.
LIVESTOCK GRAZING MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVES: To improve forage production and ecological conditions to benefit livestock, wildlife habitat, watershed values, and riparian areas.	Same as Proposed.	Same as Proposed.	To improve forage production and ecological conditions to benefit wildlife habitat, watershed values and riparian areas primarily and livestock grazing secondarily.
	To maintain, improve, or restore riparian habitat to enhance forage conditions, wildlife habitat, and stream quality.	Same as Proposed.	To maintain, improve, or restore riparian habitat to enhance forage conditions, primarily for livestock grazing.	Same as Proposed.
	To achieve proper functioning condition on about 75% of the riparian areas and have management plans in place within 10 years that would allow streams to achieve this. This would be the first priority for vegetation management.	Same as Proposed.	To achieve proper functioning condition or better of 50% of riparian areas.	To achieve proper functioning condition or better of 80% of riparian areas.
	MANAGEMENT ACTIONS: Public lands would be made available for livestock grazing while considering the needs of other resources.	Same as Proposed.	Public lands would be made available for livestock grazing, and consideration of the needs of other resources would be secondary to livestock grazing objectives.	Public lands would be made available for livestock grazing, and livestock grazing management actions would be designed to enhance wildlife, wild horse, watershed, and soils objectives.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LIVESTOCK GRAZING MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	The authorized grazing use would not exceed recognized active preference	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Permitting for livestock grazing use up to recognized active preference would continue until monitoring, negotiation, consultation, or a change in resource conditions indicates that an adjustment is needed. Monitoring would be continued or initiated following adjustments in grazing use to assure that grazing and other management objectives are being met.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Interdisciplinary rangeland monitoring studies would be conducted to detect changes in grazing use, trend and range condition, and to determine if vegetation objectives would be met for all resource uses (livestock grazing, wild horses, wildlife, etc.).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Based on monitoring, plan objectives, and AMPs, kind of livestock and seasons of use may be modified.	Same as Proposed.	Same as Proposed.	Same as Proposed, except changes from cattle to sheep would not be allowed in crucial wildlife winter ranges.
	Developed and semi-developed recreation sites would be closed to livestock grazing.	Same as Proposed.	Developed and semi-developed recreation sites would be open to for livestock grazing.	Same as Proposed.
	Authorized grazing preference may be reduced in areas with excessive soil erosion, poor condition, or as necessary to provide forage for wildlife, wild horses, or recreational use.	Same as Proposed.	Authorized grazing preference would not be adjusted to meet other resource objectives.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LIVESTOCK GRAZING MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Current authorized livestock use and existing forage reservation for wildlife and wild horses would be maintained. Monitoring would continue or be initiated to determine the need for any forage allocation adjustments.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Palmer Draw and special exclosures would be closed to livestock grazing.	Same as Proposed.	Palmer Draw and special management exclosures would be open to livestock grazing.	Same as Proposed.
	Allotments have been placed in one of three selective management categories, identified as improve (I), maintain (M), or custodial (C) based on criteria in Appendix 9-4.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	AMPs would be developed or existing ones modified. Priority for AMP development and modification is I, M, and then C category allotments. All AMPs would incorporate riparian and desired plant community objectives. Riparian objectives would be developed for C category allotments where riparian values exist.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Grazing systems would be implemented on all I category allotments, and M and C allotments, and designed to maintain or improve plant diversity.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Vegetation manipulation projects would be designed on a case-by-case basis to meet RMP objectives and would require site specific analysis.	Same as Proposed.	Same as Proposed.	Vegetation manipulation projects would be designed primarily to enhance wildlife habitat and to remove decadent stands of brush to meet plan objectives. A site specific analysis would be required.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LIVESTOCK GRAZING MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Water sources would be developed in crucial wildlife winter ranges on a case-by-case basis and only when consistent with wildlife habitat needs.	Same as Proposed.	Water sources would be developed in crucial wildlife winter ranges as necessary and primarily for livestock use.	Water sources would not be developed in crucial wildlife winter ranges unless it would benefit wildlife habitat.
	Additional alternative water supplies or facilities for livestock may be provided to relieve grazing pressure along stream bottoms and improve distribution.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Fences for livestock management would be allowed in big game habitat areas and along migration routes provided wildlife and livestock conflicts could be resolved. Herding control would be encouraged in those areas.	Same as Proposed.	Same as Proposed.	Fences would not be constructed solely to facilitate livestock management. No fences would be constructed in big game use areas and wild horse herd areas.
	All fences would follow BLM construction standards and design. Fences would be designed and located to ensure wild horse movement is not impeded. New fences would be considered on an as-needed basis.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	All fences on public lands causing documented wildlife and wild horse conflicts, would be removed, reconstructed, or modified as necessary.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Noxious weed infestations would be controlled through livestock management, mechanical, chemical or biological means.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Cooperative allotment management plans prepared in coordination with other agencies would be consistent with the approved Green River RMP.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LIVESTOCK GRAZING MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	To alleviate conflicts between wildlife use, mineral activities, and livestock grazing, measures would be developed through site specific analysis. Areas identified include but are not limited to Pine Canyon, Long Canyon, Cedar Canyon, and Table Mountain areas.	Conflicts would not be alleviated between wildlife use, mineral activities, and livestock grazing. The present boundaries and management prescriptions would continue in Pine Canyon, Long Canyon, Cedar Canyon, and Table Mountain area.	Same as Alternative A.	To alleviate conflicts between wildlife use, mineral activities, and livestock grazing, measures would be developed through site specific analysis. As an example, a new allotment would be identified and grazing plan developed considering wildlife needs for Pine Canyon, Long Canyon, Cedar Canyon, and Table Mountain area as a means to alleviate these conflicts.
	Unallotted forage on public land would be allocated to livestock grazing, wildlife, wild horses, and/or watershed resources on a case-by-case basis after consideration of all resource objectives.	Same as Proposed.	Same as Proposed.	Unallotted forage would be reserved for wildlife or wild horses, or to improve watershed condition.
	Forage increases would be allocated on a case-by-case basis to livestock grazing, wildlife, wild horses, and/or watershed resources upon evaluation through a site specific analysis.	Same as Proposed.	Forage increases would be allocated to livestock as first priority.	Forage increases would be allocated to wildlife or reserved for watershed, wild horses, and recreational uses.
	Salt blocks would be placed outside sensitive areas, such as those inhabited by special status plant species or surrounding live water. They would not be placed within 500' of live water, wetlands, and riparian areas.	Same as Proposed.	Salt blocks would be placed outside sensitive areas such as those inhabited by special status plant species or surrounding live water. They would not be placed within 100' of live water, wetlands, and riparian areas.	Same as Proposed.
	Combining and splitting allotments would be considered if it would help meet resource management objectives.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Stock driveways 4, 21, and 23 would be revoked.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
MINERALS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVE: To maintain or enhance opportunities for mineral exploration and development while protecting other resource values.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Leasable Minerals	Public lands within the checkerboard would be open to mineral development, with appropriate mitigation measures, to promote mineral resource recovery.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Incorporated cities and towns would be closed to leasing for all leasable minerals (Nondiscretionary closure).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	WSAs would be closed to leasing in accordance with wilderness Interim Management requirements (Nondiscretionary closure).	Same as Proposed.	Same as Proposed.	Same as Proposed.
Oil and Gas	MANAGEMENT ACTIONS: All lands not specifically closed would be open to consideration for leasing, exploration, and development of oil and gas.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Areas of no lease would apply to about 144,390 acres (see Map 14 and Table 2-8).	Areas of no lease would apply to about 23,030 acres (see Map 40 and Table 2-20).	Areas of no lease would apply to about 1,860 acres (see Map 41 and Table 2-21).	Areas of no lease would apply to about 158,990 acres (see Map 42 and Table 2-22).
	"No surface occupancy" (NSO) constraints on new oil and gas leasing would apply to about 7,130 acres of BLM-administered mineral estate having high potential for oil and gas development, 4,938 acres with moderate potential, and 68,190 acres with low potential (see Map 15 and Table 2-8).	"No surface occupancy" (NSO) constraints on new oil and gas leasing would apply to about 38,089 acres of BLM-administered mineral estate having high potential for oil and gas development, 26,070 acres with moderate potential, and 54,000 acres with low potential (see Map 43 and Table 2-20).	"No surface occupancy" (NSO) constraints on new oil and gas leasing would apply to about 4,090 acres of BLM-administered mineral estate having high potential for oil and gas development, 738 acres with moderate potential, and 4,863 acres with low potential (see Map 44 and Table 2-21).	"No surface occupancy" (NSO) constraints on new oil and gas leasing would apply to about 249,080 acres of BLM-administered mineral estate having high potential for oil and gas development, 107,020 acres with moderate potential, and 276,670 acres with low potential (see Map 45 and Table 2-22).

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
MINERALS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS ***Oil and Gas*** (continued)	Timing limitations, due primarily to seasonal wildlife constraints, would apply to about 934,400 acres of BLM-administered mineral estate having high potential for oil and gas development, 483,870 acres with moderate potential, and 622,190 acres with low potential (see Map 16, Map 17, Map 18, Table 2-8, and Table 2-9).	Timing limitations, due primarily to seasonal wildlife constraints, would apply to about 1,128,830 acres of BLM-administered mineral estate having high potential for oil and gas development, 647,570 acres with moderate potential, and 683,840 acres with low potential (see Map 46, Map 17, Map 18, Table 2-20, and Table 2-9).	Timing limitations, due primarily to seasonal wildlife constraints, would apply to about 263,780 acres of BLM-administered mineral estate having high potential for oil and gas development, 47,750 acres with moderate potential, and 57,480 acres with low potential (see Map 18, Table 2-21, and Table 2-9).	Timing limitations, due primarily to seasonal wildlife constraints, would apply to about 1,128,810 acres of BLM-administered mineral estate having high potential for oil and gas development, 645,350 acres with moderate potential, and 694,630 acres with low potential (see Map 46, Map 17, Map 18, Table 2-22, and Table 2-9).
	"Controlled surface use" (CSU) constraints on new oil and gas leasing would apply to about 541,320 acres of BLM-administered mineral estate having high potential for oil and gas development, 180,250 acres with moderate potential, and 533,850 acres with low potential (see Map 19 and Table 2-8).	"Controlled surface use" (CSU) constraints on new oil and gas leasing would apply to about 439,830 acres of BLM-administered mineral estate having high potential for oil and gas development, 148,550 acres with moderate potential, and 423,250 acres with low potential (see Map 47 and Table 2-20).	"Controlled surface use" (CSU) constraints on new oil and gas leasing would apply to about 485,170 acres of BLM-administered mineral estate having high potential for oil and gas development, 176,830 acres with moderate potential, and 461,620 acres with low potential (see Map 48 and Table 2-21).	"Controlled surface use" (CSU) constraints on new oil and gas leasing would apply to about 525,490 acres of BLM-administered mineral estate having high potential for oil and gas development, 161,640 acres with moderate potential, and 481,090 acres with low potential (see Map 49 and Table 2-22).
	Where special restrictions (as presently known or as identified through site specific analysis) are not necessary, standard terms and conditions would apply.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Development actions would be analyzed on a case-by-case basis where necessary to meet RMP objectives, provide for resource protection, and provide for logical development. Limitations on the amount, sequence, timing, or level of development may occur. This may result in a limitation in the number of roads and pads, or areas may not be developed until other areas have been restored to previous uses.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
MINERALS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS ***Geothermal***	Geothermal resources would be available for leasing in areas that would be open to oil and gas leasing. Areas closed to oil and gas leasing would also be closed to geothermal leasing.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Generally, the same prescriptions that apply to oil and gas leasing and development would apply to geothermal activities.	Same as Proposed.	Same as Proposed.	Same as Proposed.
MINERALS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS ***Coal***	MANAGEMENT ACTIONS: With appropriate limitations and mitigation requirements for the protection of other resource values, all BLM-administered public lands and Federal coal lands in the planning area, except for those areas closed to coal exploration and sodium prospecting (Table 2-10), would be open to coal resource inventory and exploration.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 422,000 acres of Federal coal lands within the Coal Development Potential Area would be open to further consideration for coal leasing and development with appropriate and necessary conditions and requirements for protection of other land and resource values and uses (see Table 2-11).	About 76,608 acres of Federal coal lands within the Coal Development Potential Area would be open to further consideration for coal leasing and development with appropriate and necessary conditions and requirements for protection of other land and resource values and uses (see Table 2-23).	About 432,900 acres of Federal coal lands within the Coal Development Potential Area would be open to further consideration for coal leasing and development with appropriate and necessary conditions and requirements for protection of other land and resource values and uses (see Table 2-24).	About 16,900 acres of Federal coal lands within the Coal Development Potential Area would be open to further consideration for coal leasing and development with appropriate and necessary conditions and requirements for protection of other land and resource values and uses (see Table 2-25).

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
MINERALS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS ***Coal*** (continued)	All Federal coal lands that are open to further consideration for leasing and development would be subject to continued field investigations, studies, and evaluations to determine if certain methods of coal mining can occur without having a significant long-term impact on wildlife, and watershed resources, in general, and on threatened and endangered plant and animal species and their essential habitats.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The North Fork Vermillion Creek drainage would be closed to further consideration for Federal coal leasing and development.	No similar action.	The North Fork Vermillion Creek drainage would be open to further consideration for Federal coal leasing and development and would be managed as an avoidance area. Irreparably impacted wetlands would be replaced with areas of equal or greater value.	Same as Proposed.
	Big game crucial winter ranges and birthing areas would be open to further consideration for Federal coal leasing and development with a provision for maintaining a balance between Federal coal leasing and development and adequate crucial winter range and birthing area habitats. Satisfactory abandonment and adequate reclamation of mined lands in big game crucial winter ranges and birthing areas would be required before additional Federal coal leasing and development would be initiated in these same crucial winter ranges and birthing areas.	No similar action.	Big game crucial winter ranges and birthing areas would be open to further consideration for Federal coal leasing and development provided that management actions listed for habitat for wildlife species of high State interest are applied and long-term impacts are avoided. No provision for maintaining a balance between coal development and crucial winter range would be included.	Big game crucial winter ranges would be closed to further consideration for Federal coal leasing and development.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
MINERALS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS ***Coal*** (continued)	The greater Cooper Ridge and Elk Butte areas would be open to further consideration for Federal coal leasing and development, pending further study to define deer and antelope crucial winter range and determine if coal mining would have a significant long-term impact on the deer and antelope herds.	The greater Cooper Ridge and Elk Butte areas would be open for further leasing consideration and coal development by surface mining methods, pending studies to determine the extent and importance of potential deer and antelope crucial winter range in the area and the extent and significance of coal mining impacts on the area.	Same as Proposed.	The greater Cooper Ridge and Elk Butte areas would be closed to further consideration for Federal coal leasing and development.
	For the protection of important rock art sites, other important cultural resource values, and important geologic and ecologic features, Federal coal lands with these important values would be open to consideration for further leasing and development for subsurface mining methods only (refer to Special Management Area section for more details).	No similar action.	For the protection of important rock art sites, other important cultural resource values, and important geologic and ecologic features, more Federal coal lands, compared to the Proposed Plan, would be open to further consideration for leasing and development for subsurface mining methods only (refer to Special Management Area section for more details).	For the protection of important rock art sites, other important cultural resource values, and important geologic and ecologic features, all Federal coal lands in these areas would be closed to further consideration for leasing and development (refer to Special Management Area section for more details).
	-Any Federal coal leasing and development on these lands would include a no surface occupancy requirement for any related ancillary facilities, and surface disturbing activities would be prohibited.	-No similar action.	-Same as Proposed.	-No similar action.
	The Cedar Canyon ACEC would be open to further consideration for coal leasing for subsurface mining methods only. Very limited related surface operations or activities would be allowed.	Same as Proposed.	The Cedar Canyon ACEC would be open to further consideration for coal leasing for any mining method, provided scenic, wildlife, and watershed conflicts could be mitigated.	The Cedar Canyon ACEC would be closed to further consideration for Federal coal leasing and development.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
MINERALS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS ***Coal*** (continued)	In general, cultural sites on Federal coal lands would be managed as avoidance areas for surface disturbing activities. This includes cultural sites that are either listed or eligible for listing on the NRHP (this does not include those closed to leasing, or to surface mining methods, or having a no surface occupancy restriction). If not possible to avoid cultural sites, intensive mitigation of the surface disturbing activities would be emphasized.	No similar action.	Same as Proposed.	Same as Proposed.
	-if necessary, appropriate buffer zones would be established to protect sites that are listed or eligible for listing on the NRHP. Data recovery measures would be implemented in the context of an NRHP district to maximize efficiency of data recovery efforts, when possible.	-no similar action.	-same as Proposed.	-no similar action.
	Federal coal lands within the City of Rock Springs modified Expansion Area would be closed to further consideration for coal leasing and development to assure that subsidence would be avoided and that public health and safety would not be adversely affected.	Federal coal lands within the City of Rock Springs Expansion Area would be closed to further consideration for coal leasing and development.	Federal coal lands within the City of Rock Springs Modified Expansion Area would be open to further consideration for coal leasing and development with requirements to assure that subsidence would be avoided or mitigated and that public health and safety would not be adversely affected.	Same as Alternative A.
	-No similar action.	-No similar action.	-A leasing plan would be prepared prior to issuing any leases.	-No similar action.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
MINERALS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS ***Coal*** (continued)	Grouse nesting areas (sage or sharptail grouse) would be open to further consideration for Federal coal leasing and development. Activities such as exploration, coring, or construction of ancillary facilities would be allowed with a requirement to delay any related surface disturbing activities that would adversely affect an occupied grouse nest, until nesting is completed.	No similar action.	Same as Proposed.	Grouse nesting areas (sage and sharptail grouse) would be closed to further consideration for Federal coal leasing and development.
	Active grouse leks (sage and sharptail grouse) and the area within a 1/4 mile radius of active leks would be managed as avoidance areas for surface disturbing activities and would be open to further consideration for Federal coal leasing and development with the following requirements:	No similar action.	Same as Proposed.	Active grouse leks (sage and sharptail grouse) and the area within a 1/4 mile radius of active leks would be closed to further consideration for Federal coal leasing and development.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
MINERALS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS *Coal* (continued)	-surface disturbing activities associated with coal exploration and development would be avoided in these areas, if possible. If not possible, intensive mitigation would be emphasized;	-no similar action.	-same as Proposed.	-no similar action.
	-for exploration activities and ancillary facilities, permanent and high profile structures could be prohibited in sage grouse leks; and	-no similar action.	-no similar action.	-no similar action.
	-during the grouse mating season, surface uses and activities would be prohibited between the hours of 6:00 p.m. and 9:00 a.m., within a 1/2 mile radius of active leks.	-no similar action.	-no similar action.	-no similar action.
	Wetland and riparian areas on Federal coal lands would be managed as avoidance areas for surface disturbing activities and would be open to consideration for coal leasing and development with the requirement that related surface disturbing activities would be avoided in these areas, if possible. If not possible, intensive mitigation would be emphasized.	No similar action.	Same as Proposed.	Wetland and riparian areas on Federal coal lands would be closed to further consideration for coal leasing and development.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Competitive Federal Coal Areas With Surface Mining Potential	No similar action.	About 50,714 acres of Federal coal lands would be open to further consideration for leasing and development of surface coal mining methods.	No similar action.	No similar action.
	No similar action.	About 300 acres would be open to further consideration for coal leasing and development by surface mining methods, pending results of a utility corridor study.	No similar action.	No similar action.
	No similar action.	Coal leasing would be deferred on 1,620 acres of producing oil and gas fields, unless or until it is determined that coal development would not interfere with oil and gas operations or that such conflicts can be mitigated in these areas.	No similar action.	No similar action.
Competitive Federal Coal Areas With Subsurface Mining Potential	No similar action.	About 87,214 acres of Federal coal lands would be open to further consideration for leasing and development by subsurface mining methods.	No similar action.	No similar action.
	No similar action.	About 83,210 acres would be open to surface operations and impacts associated with subsurface mining; however, 7,186 of these acres would be restricted to very limited surface operations and impacts.	No similar action.	No similar action.
	No similar action.	About 3,420 acres would be open to further consideration for coal leasing and development by subsurface mining methods, pending results of a utility corridor study.	No similar action.	No similar action.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Competitive Federal Coal Areas With Subsurface Mining Potential (continued)	No similar action.	Coal leasing would be deferred on about 3,620 acres of producing oil and gas fields unless or until it is determined that coal development would not interfere with oil and gas operations or that such conflicts can be mitigated in these areas.	No similar action.	No similar action.
Areas of BLM-Administered Public Land Surface Over State-Owned Coal	No similar action.	About 7,840 acres would be open to surface coal mining methods.	No similar action.	No similar action.
	-no similar action.	-About 10,812 acres would be open to subsurface mining methods. About 470 of these acres would be closed to any related surface operations and impacts.	-no similar action.	-no similar action.
	-no similar action.	-those parcels of BLM-administered public land surface overlying state-owned coal, that are within the planning area but were not reviewed in the coal screening process, would be reviewed on a case-by-case basis, should the state lease the coal.	-no similar action.	-no similar action.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Areas of BLM-Administered Public Land Surface Over State-Owned Coal (continued)	BLM-administered public land surface overlying state-owned coal would be open to further consideration for coal leasing and development with appropriate and necessary conditions and requirements for protection of other land and resource values and uses (including big game crucial winter range, grouse leks, cultural values, geologic features, rights-of-way, and City of Rock Springs expansion area).	No similar action.	Same as Proposed.	BLM-administered public land surface overlying state-owned coal would be closed to further consideration for coal leasing and development for protection of other land and resource values and uses (including big game crucial winter range, grouse leks, cultural values, geologic features, rights-of-way, City of Rock Springs expansion area).
	-These lands would be subject to continued field investigations, studies, and evaluations to determine if certain methods of coal mining can occur without having a significant long-term impact on wildlife and watershed resources in general, and on threatened and endangered plant and animal species and their essential habitats.	-No similar action.	-Same as Proposed.	-No similar action.
	-About 3,000 of these acres would be closed to surface mining activities to protect cultural and geologic values.	-No similar action.	-About 2,400 acres would be closed to surface mining activities to protect cultural and geologic values.	-Same as Proposed.
Coal PRLAs	The Beans Spring Coal PRLA has been canceled. Processing of leases in the Beans Spring area would be considered, with special attention given to those sensitive value areas identified through the coal screening process. These lands would thus be managed the same as the coal lands immediately surrounding them.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sodium	MANAGEMENT ACTION: The Known Sodium Leasing Area would be open to exploration and leasing consideration, on a case-by-case basis, but would be closed to prospecting permits. Other resource objectives would be considered during the leasing process.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The remainder of the planning area would be open for prospecting, except those areas listed in Table 2-10.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Other Leasables	MANAGEMENT ACTIONS: Leasing would be considered on a case-by-case basis and in consideration with resource objectives.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Mineral Materials	MANAGEMENT ACTIONS: Sale areas, community pits, and common use areas would be established as needed in conformance with other resource objectives. Sensitive areas would be closed to mineral material sales (Table 2-12).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Topsoil would not be sold.	Same as Proposed.	Topsoil would be sold.	Same as Proposed.
Locatable Minerals	MANAGEMENT ACTIONS: A plan of operations would be required for any surface disturbance activity in designated special management areas (ACECs, etc.) and areas closed to off-road vehicle travel.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The planning area would be open to mineral location, exploration, and development other than lands withdrawn from mineral location (Table 2-5).	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Locatable Minerals (continued)	Existing mineral classifications and withdrawals no longer needed would be revoked.	Existing mineral classifications and withdrawals would remain in effect.	Same as Proposed.	Same as Proposed.
Geophysical	MANAGEMENT OBJECTIVE: To provide opportunity for exploration of mineral resources and gathering geophysical data, while protecting other resource values.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: The area would be open to geophysical activity except for areas where off-road vehicle use or explosive charges would cause unacceptable impacts (Table 2-13).	Same as Proposed, only fewer areas would be closed (Table 2-13).	Same as Alternative A.	Same as Proposed.
	Vehicles used for geophysical activities would follow the guidelines of the ORV designations, but vehicle-related activities could occur off-road (except for those areas that would be designated as closed to vehicle travel), provided that a site specific analysis determines resource objectives could be met.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Geophysical travel through developed and semi-developed recreation sites would be restricted to existing roads and trails.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Geophysical (continued)	Geophysical exploration on the potential wild sections of the Sweetwater River under Wild and Scenic River consideration would be limited to foot access and placement of surface cables. No off-road vehicles would be allowed. Surface charges may be allowed if a site specific analysis determines no adverse impacts would occur to river values.			
	Geophysical shotholes and vibroseis locations would generally be restricted within 300 feet of historic and recreational trails.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Off-road vehicles used for geophysical exploration or similar activities could cross and drive down the historic trails, provided a site specific analysis determines that no adverse effects would occur.	Same as Proposed; however, geophysical vehicles would be limited to existing roads and trails in South Pass area.	Same as Proposed.	Same as Proposed.
ORV MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVE: To provide opportunities for off-road vehicle travel in conformance with other resource management objectives.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: The planning area would be limited to existing roads and trails except for the areas listed below.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
ORV MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	The existing open area in the Killpecker Sand Dunes would remain open. No new open areas would be established.	Same as Proposed.	Same as Proposed, except the size of the existing open area would be reduced. Only the unstabilized dunes in the Killpecker Sand Dunes would be open to ORV travel. No new ORV open areas would be established.	Same as Proposed.
	Where necessary, areas would be closed to ORV travel to protect other resource values and public health and safety in the areas listed in Table 2-14 and Map 20.	Where necessary, areas would be closed to ORV travel to protect other resource values and public health and safety in the areas listed in Table 2-26 and Map 50.	Where necessary, areas would be closed to ORV travel to protect other resource values and public health and safety in the areas listed in Table 2-27 and Map 51.	Where necessary, areas would be closed to ORV travel to protect other resource values and public health and safety in the areas listed in Table 2-28 and Map 52.
	To protect resource values, off-road vehicles would be limited to designated roads and trails while providing continued access on approved routes, in portions of the Cedar Canyon ACEC, Currant Creek/Sage Creek, Dug Springs Stage Station, Green River City Limits, visual area surrounding petroglyphs, area surrounding NRHP site in Natural Corrals, North and South Table Mountains, Parting of the Ways, South Pass, steep slopes of White Mountain, Adobe Town, Monument Valley, Wind River Front, and the Greater Red Creek area.	To protect resource values, off-road vehicles would be limited to designated roads and trails while providing continued access on approved routes, in Adobe Town, Red Creek Drainage, Twin Buttes-Devils Playground area, lands surrounding the Flaming Gorge NRA, Honeycomb Buttes, Sand Dunes and the steep slopes along White Mountain.	To protect resource values, off-road vehicles would be limited to designated roads and trails while providing continued access on approved routes, in portions of the Natural Corrals and the Dug Springs and LaClede Stage Stations.	To protect resource values, off-road vehicles would be limited to designated roads and trails while providing continued access on approved routes, in the Currant Creek, Sage Creek, Pine and Little Mountain areas, Dug Springs and LaClede Stage Stations, Monument Valley, portions of South Pass, Steamboat Mountain proposed ACEC, and the steep slopes of White Mountain.
	Seasonal restrictions for ORVs could be applied in crucial wildlife habitats (strutting grounds, nesting areas, and spawning beds, crucial big game winter ranges, parturition areas) as needed. Existing restrictions would apply to Steamboat Mountain, Cedar Canyon, and the Wind River Front.	Same as Proposed.	No seasonal restrictions would apply to ORVs except for periods when raptors are nesting.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
ORV MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Over-the-snow vehicle travel would generally follow the same prescriptions as for other vehicles.	Same as Proposed.	Same as Proposed.	Same as Proposed.
RECREATION RESOURCE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVE: To ensure continued availability for recreational opportunities in accordance with the Recreation Opportunity Spectrum (Map 21) and to meet legal requirements for public health and safety.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: Most public lands would be open and available for recreation use.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Recreation opportunities would be a major management emphasis in the Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, Leucite Hills, Red Creek, Pine and Little Mountains, and Cedar Canyon areas (Map 22).	Recreation opportunities would be a major management emphasis in the Wind River Front, Sweetwater River, Steamboat Mountain, Killpecker Sand Dunes, Leucite Hills, Red Creek, Pine and Little Mountains, and Cedar Canyon areas (Map 22).	Same as Proposed.	Recreation opportunities would be a major management emphasis in the Wind River Front, Killpecker Sand Dunes, Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, Leucite Hills, Red Creek, Pine and Little Mountains, and Cedar Canyon areas (Map 22).
	The Killpecker Sand Dunes, and Oregon and Mormon Pioneer National Historic Trails, the Continental Divide National Scenic Trail, Continental Divide Snowmobile Trail, the Green River, and the Wind River Front would be designated special recreation management areas to enhance recreation opportunities (Map 23).	The Killpecker Sand Dunes, and Oregon and Mormon Pioneer National Historic Trails would remain designated special recreation management areas (Map 23).	The Killpecker Sand Dunes, Oregon and Mormon Pioneer National Historic Trails, Wind River Front, the Green River, and the Continental Divide Snowmobile Trail would be designated special recreation management areas (Map 23).	The Killpecker Sand Dunes, Oregon and Mormon Pioneer National Historic Trails, Wind River Front, and the Green River would be designated special recreation management areas (Map 23).

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
RECREATION RESOURCE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	A withdrawal from the public land laws, including the mining laws, would be pursued for the Sweetwater campgrounds.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The Green, Big Sandy, and Sweetwater Rivers, and Bitter Creek between the towns of Green River and Rock Springs would be managed for recreation uses.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	BLM would cooperate in the establishment of a green belt along the Green River from Fontenelle dam to Flaming Gorge Reservoir.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 1.5 miles of the Big Sandy River adjacent to the Bridger-Teton Forest boundary would be managed to retain pristine values. Actions would not be allowed that would alter these river values.	On about 1.5 miles of the Big Sandy River, actions could be allowed provided watershed/water quality, recreation, and riparian objectives would be met.	Same as Proposed.	Same as Proposed.
	A 14-day camping limit would be maintained on public lands.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Dirpersed camping would not occur on or within 200' of springs, seeps, and ponds or on posted wildlife and livestock watering areas.	Dispersed camping would occur around livestock waters and on or within 100' of springs, seeps, and ponds.	Dispersed camping would occur adjacent to livestock and wildlife waters, springs, seeps, and ponds.	Dispersed camping would not occur on or within 500' of livestock or wildlife waters, springs, seeps, and ponds.
	New recreation sites would generally not be developed in or within 500' of riparian areas and floodplains. Exceptions may be considered following site specific analysis.	Recreation sites would be developed within 500' of riparian areas and floodplains under the guidelines of Executive Orders 11988 and 11990 to protect these areas.	Same as Alternative A.	New recreation sites could not be developed in riparian areas and floodplains.
	Vegetation buffer strips would be maintained between developed recreational facilities and surface water.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
RECREATION RESOURCE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Recreation sites, development projects, and recreation access and use would be managed to maintain or improve wetland habitat conditions along intensively used streams and reservoirs.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The 14-Mile recreation site would be closed to development activities such as powerlines, pipelines, or well pads. The area would be open to development of recreation site facilities.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Areas within 1/4 mile of developed, undeveloped, and semi-developed recreation sites would be avoidance areas for activities such as roads, powerlines, pipelines, and well pads. These areas would be open to development of recreation site facilities.	Areas within 1/4 mile of developed recreation sites would be avoidance areas for activities such as roads, powerlines, pipelines, and well pads. These areas would be open to development of recreation site facilities.	Same as Proposed.	Same as Alternative A.
	Pilot Butte, Emmons Cone, and Boars Tusk would be managed as geologic features.	Same as Proposed (see Table 2-20).	Same as Proposed (see Table 2-21).	Same as Proposed (see Table 2-22).
	Travel routes that meet the criteria for backcountry byways would be designated.	No backcountry byways would be designated.	Same as Proposed.	Same as Proposed.
	Posting information and directional signs would be necessary in some areas. Sign posting would be provided to promote visitor use of the various use areas consistent with other resource management objectives.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Cutting of trees and firewood for camping purposes would be limited to designated areas.	Cutting of trees and firewood for camping purposes would be allowed anywhere within and adjacent to the campgrounds.	Same as Alternative A.	Areas in and around developed and semi-developed camping and recreation areas would be closed to tree and firewood cutting.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
RECREATION RESOURCE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS **Wind River Front Special Recreation Management Area**	MANAGEMENT OBJECTIVE: To provide for protection and enhancement of recreation opportunities; protect the air quality in the adjacent Class I airshed; maintain or enhance biological diversity; to prevent fragmentation of communities and habitats, and to maintain crucial big game habitat.	To retain recreation opportunities.	To emphasize managing for recreation opportunities.	To emphasize managing for dispersed recreation opportunities.
	MANAGEMENT ACTIONS: The area would be designated as a Special Recreation Management Area.	The area would not be designated as a Special Recreation Management Area.	Same as Proposed.	Same as Proposed.
	Some activities may be precluded from portions of the area to meet objectives.	Other activities would not be excluded, however, to achieve recreation objectives.	Same as Alternative A.	Certain recreation development activities would be excluded in favor of meeting other resource objectives, such as wildlife and riparian resources.
	The area would be divided into eastern and western units to facilitate management.	No similar action.	No similar action.	No similar action.
	The eastern portion (88,510 acres) would be closed to mineral leasing consideration and to major facilities. The western portion (172,630 acres) would remain open to leasing consideration with appropriate measures to ensure area objectives are met.	The entire area would be open to consideration for mineral leasing.	The entire area, except for the proposed wild segments along the Sweetwater Proposed Wild and Scenic River, would be open for leasing consideration.	The entire area, except for the proposed wild segments of the Sweetwater Proposed Wild and Scenic River, and special status plant species would be open for leasing consideration.
SPECIAL STATUS PLANT SPECIES MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS **(Also refer to Section on Special Designation Management Areas)**	MANAGEMENT OBJECTIVE: To maintain or enhance essential and important habitats for special status plant species (i.e., sensitive, candidate, and threatened and endangered plants) and to prevent the need for any special status plant species becoming listed as threatened and endangered plants.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
SPECIAL STATUS PLANT SPECIES MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	MANAGEMENT ACTIONS: Searches for special status plant species would be required on potential habitat areas prior to conducting surface disturbing activities.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Special status plant species and their related habitats would be protected by limiting surface uses, off-road vehicle use, and explosive charges or any other surface disturbing or disruptive activity that may cause adverse affects to the plants (Map 24).	Explosive charges could be allowed. Otherwise, special status plant species and their related habitats would be protected by limiting surface uses, off-road vehicle use, and other surface disturbing or disruptive activities that may cause adverse affects to the plants.	Same as Proposed.	Same as Proposed.
	Known locations of special status plant species would be closed to mineral location and a withdrawal from mineral location would be pursued.	Known locations of special status plant species would be open to mineral location.	Same as Alternative A.	Same as Proposed.
	Known locations of special status plant species would be closed to mineral material sales.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Known locations of special status plant species would be open to mineral leasing with a no surface occupancy requirement.	Known locations of special status species would be closed to mineral leasing.	Same as Proposed.	Same as Alternative A.
	Known locations of special status plant species would be closed to off-road vehicles. Off-road vehicles would be limited to designated roads and trails in areas of essential and important habitat.	Off-road vehicles would be limited to existing roads and trails.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
SPECIAL STATUS PLANT SPECIES MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	A site specific analysis would be conducted and documented for fire suppression or prescribed burning activities around special status plant species locations. All off-road vehicle use for fire suppression and prescribed burning activities would be limited to existing roads and trails on essential and important special status plant species habitat.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Known locations of special status (candidate) plant species would be evaluated on a case-by-case basis to determine if they meet the relevance and importance criteria to be considered for ACEC designation. If appropriate, such locations would be proposed for ACEC designation and the Green River RMP would be amended, as necessary. See the section on Special Designation Management Areas for those areas of known candidate species locations that are proposed for ACEC designation.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Management prescriptions for any plant species that would be proposed for listing as "threatened or endangered" or may become listed as "threatened or endangered" would be developed on a case-by-case basis, in consultation with the USFWS.	Same as Proposed.	Same as Proposed.	Same as Proposed.
VEGETATION MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVE: To maintain or enhance vegetation community health, composition, and diversity (desired plant community) to meet wildlife, watershed, wild horse, and livestock management objectives.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
VEGETATION MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	MANAGEMENT ACTIONS: Desired plant community objectives would be established for the planning area if possible when ecological site inventory data becomes available. All activity plans would incorporate desired plant community objectives.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Riparian habitat in proper functioning condition is the minimum acceptable status or level within the Green River Resource Area and BLM in general. Under this alternative, 75% of the riparian areas within the Area would have management plans in place within 10 years that would allow streams to achieve proper functioning condition.	Same as Proposed.	Proper Functioning Condition would be achieved on 50% of riparian areas within the life of the plan.	Proper Functioning Condition would be achieved on 80% of riparian areas within the life of the plan.
	This would be the first priority for vegetation management. Livestock utilization levels may be limited (see Appendix 9-2).	No similar action.	No similar action.	No similar action.
	Mechanical, biological, chemical, and prescribed fire would be the methods utilized to treat vegetation.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Prescribed fire would be the preferred method of treatment. Other vegetation manipulation methods would be considered on a case-by-case basis depending on objectives and cost benefits.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Prescribed burns would not be conducted in areas with surface coal or other fossil fuel surface outcrops.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
VEGETATION MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Prescribed burns generally would be conducted in areas having greater than 35% sagebrush composition, 20% desirable grass composition, and greater than 10 inches of precipitation.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	All treated areas would be rested from livestock grazing for at least 2 growing seasons. Treated areas would be fenced from livestock if necessary.			
	Vegetation treatments would be designed to enhance edge effect, cover, and aesthetics.	Same as Proposed.	Vegetation treatments would be designed for maximum brush removal; design for edge effect cover and aesthetics would be secondary.	Same as Proposed.
	Additional riparian acreage may be acquired (840 acres).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	All vegetation manipulation projects would involve site specific environmental analysis; coordination with affected livestock operators and the WGFD.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Treatments in riparian and adjacent upland areas would be designed site specifically to ensure excessive sedimentation along streams would not occur.	Riparian and adjacent upland areas could be treated simultaneously.	Same as Alternative A.	Same as Alternative A.
	Vegetation buffer strips would be provided along streams to control sedimentation. Generally vegetation buffer strips 100' wide would be left intact adjacent to perennial streams.	Same as Proposed.	No buffer strips would be required for treatments adjacent to perennial streams.	Vegetation buffer strips 300' wide would be left intact adjacent to perennial streams.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
VEGETATION MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	No more than 50% of the vegetation cover would be removed from the inner gorge of intermittent and ephemeral drainages to protect watershed values.	Same as Proposed.	Specific vegetation cover objectives would be based on livestock grazing objectives.	Same as Proposed.
	Herbicide loading sites would not be located closer than 500' to live water, floodplains, riparian areas, and all special status plant locations.	Same as Proposed.	Same as Proposed.	Same as Proposed.
VISUAL RESOURCE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVE: To maintain or improve scenic values, visual quality, and to establish visual resource priorities in conjunction with other resource values.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: Visual resource management classes would be retained or modified to enhance cultural, wild horse viewing, and special management area values (see Table 2-15 and Map 25). In some areas, visual resource management classes would be elevated.	Visual resource management classes would not modify (see Table 2-15 and Map 53).	Visual resource management classes would modify to facilitate production activities (see Table 2-15 and Map 54). In certain areas, visual resource management classes would be lowered to accommodate development activity.	Visual resource management classes would be modified to enhance management in Special Management Areas, along highways, and in important cultural or historical areas (see Table 2-15 and Map 55).
	Proposed alterations on the lands that would be classified as Class II areas would be designed to retain the existing character of the landscape.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Proposed alterations on the lands that would be classified as Class III would be designed to partially retain the existing character of the landscape.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
VISUAL RESOURCE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Actions on the lands that would be classified as Class IV areas would provide for management activities which require major modification of the existing character of the landscape.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	All surface disturbing actions, regardless of the visual resource management class, would be mitigated to reduce visual impacts. This would be achieved by designing and locating the disturbances in a manner that most closely meets the minimum degree of contrast acceptable for the visual resource management class.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Projects would be designed to meet the objectives of the established visual classifications and appropriate mitigation applied. Facilities including those related to existing or new wells, structures, powerlines, linear rights-of-way, etc. would be screened, painted, or designed to blend with the surrounding landscape.	Same as Proposed.	Same as Proposed.	Same as Proposed. A program would be initiated in the planning area to improve the visual quality of oil field areas by working with companies to reduce the visual impact of existing facilities through such methods as painting, screening, and reclamation.
	Visual resources along Highway 28 in Fremont County would be protected and proposed alterations would be designed to retain the existing character of the landscape.	Visual resources along Highway 28 in Fremont County would not be fully protected and some modifications to the landscape could occur.	Same as Alternative A.	Same as Proposed.
	The stretch of I-80 between Rock Springs and Green River would be managed consistent with the Class III visual resource management classification. Views along other major highways would be managed according to the current classification.	Same as Proposed.	Same as Proposed.	Views along all major highways would be managed consistent with the Class II visual resource management classification.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
VISUAL RESOURCE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Suitable wild horse herd viewing areas would be identified and developed. Visual intrusions would not occur within a 1/2 mile radius.	Only one wild horse viewing area would be established on Highway 191. Visual intrusions within the visual horizon that could interfere with seeing wild horses would not be allowed.	Same as Proposed.	Same as Proposed; in addition, visual intrusions would not be allowed within a 2-mile radius.
	Structures and facilities that could be viewed from Fontenelle Reservoir would be permitted if they could be designed to blend into the landscape.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Management actions in rehabilitation areas would be designed to reclaim and improve visual resource values to achieve a higher classification (Class III and Class IV).	Same as Proposed.	Same as Proposed.	Same as Proposed.
WATERSHED/SOILS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVES: To stabilize and conserve soils, increase vegetation production, to maintain or improve surface or ground water quality and protect, maintain, or improve wetlands, floodplains, and riparian areas.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: Land uses and surface disturbing activities would be designed to reduce channel erosion, specifically bank erosion, and channel incision that would result in unacceptable losses of riparian habitat, and accelerate surface erosion. Damaged wetland and riparian areas would be restored (Map 26).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Surface disturbing activities would avoid areas with steep slopes, highly erodible soils, or difficult to reclaim soils.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WATERSHED/SOILS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Wetlands and floodplains (95,550 acres) within the planning area would be managed in accordance with Executive Orders 11988 and 11990.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Activity plans which include measures to reduce salinity would be completed and implemented. Additionally, activity plans would also be designed with measures to reduce phosphate, salt, and sediment loading to Fontenelle and Flaming Gorge Reservoirs.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Rehabilitation plans would be developed and implemented on newly disturbed areas and for existing disturbed sites as needed.	Same as Proposed.	Rehabilitation plans would be written only for newly disturbed areas.	Same as Proposed.
	Requirements and methods for achieving water quality improvement would be incorporated into activity plans using best management practices as necessary. Priority areas include the Upper Bitter Creek, Four J Basin, Vermillion Creek, and Upper Salt Wells Creek watersheds.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Areas within 500' of or on 100-year floodplains, wetlands, or perennial streams, and within 100' of the inner gorge of intermittent and large ephemeral drainages would be avoidance areas for surface disturbing activities. Linear crossings would be considered on a case-by-case basis (Map 27).	Same as Proposed.	Areas within 100-year floodplains, riparian areas, and wetlands, and areas within 100' of the inner gorge would be avoidance areas for surface disturbing activities.	Areas within 500' of or on 100-year floodplains would be closed to surface disturbing activities. Linear crossings would be considered on a case-by-case basis. Areas within 100' of the inner gorge of intermittent and large ephemeral drainages would be avoidance areas for surface disturbing activities (Map 27).

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WATERSHED/SOILS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Areas within 100-year floodplains, wetlands, or riparian areas would be closed to construction of new permanent structures (e.g., storage tanks, well pads, structures, etc.).	Same as Proposed.	Areas within 100-year floodplains, wetlands, or riparian area would be open to consideration of permanent structures.	Same as Proposed.
	Requirements for lining of reserve pits would be determined on a case-by-case basis. Lined pits, barrier walls, or closed mud systems may be utilized as necensary (see Appendix 5-1).	Same as Proposed.	Same as Proposed.	All reserve pits would be lined.
	Aquifer recharge areas would be managed to protect groundwater quality, through maintenance of the vegetative cover that contributes to recharge, and limiting surface disturbing activities. Activities within the Superior recharge area would be allowed only if groundwater quality would be protected.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Water quality would be monitored as needed to monitor pollution and land health.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Legal protection of water uses necessary for the accomplishment of Bureau programs would be obtained.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Management plans to provide direction to reduce sediment and improve water quality would be developed for areas such as Cedar Mountain and Sage Creek/Currant Creek.	Same as Proposed.	No watershed management plans would be developed.	Same as Proposed.
	No similar action.	No similar action.	No similar action.	All livestock grazing would be removed from around live water streams.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILD AND SCENIC RIVER MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	See Wild and Scenic Rivers under Special Management Areas.	See Wild and Scenic Rivers under Special Management Areas.	See Wild and Scenic Rivers under Special Management Areas.	See Wild and Scenic Rivers under Special Management Areas.
WILD HORSE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVES: To protect, maintain, and control viable, healthy, free-roaming herds of wild horses, and to provide adequate habitat.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	To provide appropriate numbers of wild horses to maintain viable, healthy herds in harmony and consistent with other resource management objectives and to provide the public the recreational opportunity for viewing wild horses.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: Five wild horse herd areas, including the Little Colorado Desert, would be maintained. Planning area AMLs would range from 1,105 to 1,600 head (Table 2-16, Table 2-17, and Map 28).	Four wild horse herd areas would be maintained. The Little Colorado Desert herd area would not be formed. Planning area AMLs would range from 1,036 to 1,500 head (Table 2-29 and Map 28).	Same as Alternative A.	Same as Proposed.
	Wild horse herd management plans would be implemented and consistent with other resource management objectives. A monitoring program would be developed to provide information to support wild horse management decisions (see Table 2-18).	Same as Proposed (see Table 2-30).	Same as Proposed (see Table 2-30).	Same as Proposed (see Table 2-18).

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILD HORSE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Specific objectives including consideration of desired plant communities, wildlife habitat, watershed, livestock grazing, and other resource needs for wild horse herd management areas would be included in herd management plans.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Gathering plans would be prepared to remove excess horses from inside and outside wild horse herd management areas.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Adequate forage would be provided to support appropriate management levels in the herd units and that herds maintain appropriate age, sex, and color ratios.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Fencing would be restricted to those situations where it would enhance multiple-use values as determined on a case-by-case basis.	Same as Proposed.	Same as Proposed.	New fences would not be constructed in wild horse herd management areas.
	Water developments would be provided, if necessary, to improve herd distribution and manage forage utilization. Water developments in wildlife crucial winter ranges would be allowed if no adverse impacts would occur to the crucial winter range.	Water developments would not be provided for wild horses unless consistent with wildlife habitat needs.	New water developments would be provided. Controlled waters (i.e., wells) could be allowed in wildlife crucial winter ranges.	Same as Alternative B.
WILDERNESS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVE: To retain the wilderness quality in accordance with the "Interim Management Policy and Guidelines for Lands Under Wilderness Review," until Congress acts on designation.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILDERNESS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	MANAGEMENT ACTIONS: Wilderness management plans would be prepared for those WSAs designated by Congress as wilderness. WSAs (223,000 acres) are closed to mineral leasing (subject to valid existing rights).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Activities adjacent to WSAs would be reviewed to ensure wilderness values are retained in accordance with the Interim Management Policy.	Same as Proposed.	Same as Proposed.	Same as Proposed.
WILDLIFE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS	MANAGEMENT OBJECTIVES: To maintain and enhance fish and wildlife resources and provide for biological diversity of plants and wildlife resources while ensuring healthy ecosystems.	To maintain biological diversity of plants and wildlife species within habitat capabilities.	Same as Proposed.	Same as Proposed.
	To achieve a healthy and productive condition in wetland/riparian areas.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	To provide habitat for threatened, endangered, special status, and sensitive plant and animal species.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	To restore disturbed or altered habitat to attain desired native plant communities, while providing for wildlife needs and soil stability.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: High value wildlife habitat such as crucial winter ranges and birthing areas would be maintained or improved.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILDLIFE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	To the extent possible, suitable wildlife habitat and forage would be provided to support wildlife populations defined in the Wyoming Game and Fish Department 1989 Strategic Plan objectives. Accommodating changes to Wyoming Game and Fish Department planning objective levels would be considered and based on habitat capability and availability.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	BLM would cooperate with the Wyoming Game and Fish Department in conducting studies for the introduction and reintroduction of native and nonnative wildlife and fish species, within the planning area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Management practices such as proper distance restrictions, seasonal restrictions, and rehabilitation standards for all wildlife and sensitive species habitats would be utilized where applicable to adequately protect wildlife species and their habitats.	Same as Proposed.	Same as Proposed	Same as Proposed.
	Fences that are documented to be a problem to big game migration would be modified to meet BLM fence standards.	Same as Proposed.	Same as Proposed.	All problem fences would be removed.
	Big game crucial winter ranges and parturition areas, sage grouse habitat, and raptor nesting sites would be subject to seasonal restrictions.	Same as Proposed.	Big game crucial winter ranges, parturition areas, and sage grouse habitat would not be subject to seasonal restrictions.	Same as Proposed.
	Water developments for livestock and wild horse use on crucial habitat could be considered when consistent with wildlife habitat needs.	Same as Proposed.	Water developments for livestock and wild horse use would be allowed on crucial wildlife habitat.	Water developments for livestock and wild horse use could not be developed in crucial wildlife habitat unless it would benefit wildlife habitat.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILDLIFE MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS (continued)	Establishing and maintaining special management purpose exclosures for important wildlife values would be considered on a case-by-case basis. Exclosures would be closed to livestock grazing.	Same as Proposed.	Establishing and maintaining special management purpose exclosures for important wildlife values would be considered on a case-by-case basis. Exclosures would be open to livestock grazing.	Same as Proposed.
	Animal damage control activities would be considered on a case-by-case basis. These activities are subject to established procedures and policies as outlined in the national and state level memoranda of understanding between BLM and USDA (APHIS).	Same as Proposed.	Same as Proposed.	Animal damage control practices would not be allowed.
	Where needed, habitat improvement plans and reclamation actions would be initiated in highly developed areas to improve and restore habitats. Priority would be given to meeting objectives for healthy, native watersheds or ecosystems.	Same as Proposed.	Habitat improvement plans and reclamation actions would be initiated only on newly developed areas. Priority would be given primarily to livestock forage needs and secondarily to wildlife and watershed.	Same as Proposed.
SPECIAL DESIGNATION MANAGEMENT AREAS ON BLM-ADMINISTERED PUBLIC LANDS	For additional information, refer to Map A and Table 2-19.	For additional information, refer to Map 56 and Table 2-19.	For additional information, refer to Map 57 and Table 2-19.	For additional information, refer to Map 58 and Table 2-19.
Cedar Canyon ACEC	MANAGEMENT OBJECTIVE: To provide protection and enhancement of important cultural, scenic, and wildlife habitat values.	Same as Proposed.	Same as Proposed.	Same as Proposed.
General Area	MANAGEMENT ACTIONS: The existing Cedar Canyon ACEC designation (2,550 acres) would be retained.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Cedar Canyon ACEC ***General Area*** (continued)	The entire ACEC would be open to mineral leasing.	Same as Proposed.	Same as Proposed.	The entire ACEC would be open to fluid mineral leasing but closed to coal leasing.
	Big game seasonal restrictions would be applied to disruptive activities, as needed.	Same as Proposed.	Big game seasonal restrictions would not be applied to disruptive activities.	Same as Proposed.
	Vegetation would be managed to provide habitat for wildlife.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Site specific analysis would be conducted to alleviate conflicts between wildlife use, livestock grazing, and development activities.	Site specific analyses would not be conducted to alleviate conflicts.	Same as Alternative A.	Same as Proposed.
	Soils would be managed to maintain or reduce erosions levels and improve vegetation cover.	Same as Proposed.	Same as Proposed,	Same as Proposed.
	Habitat for raptors would be maintained or enhanced. Cliffs, tree hollows, and pinnacles would be managed to provide the necessary habitat.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The ACEC would be managed consistent with the Class III and Class IV visual resource management classification, and facilities would be designed to blend with the landscape.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The ACEC area would be open to coal leasing and development by subsurface mining methods only. Very limited placement of surface facilities would be considered.	About 2,270 acres in the ACEC would be open to coal leasing and development by subsurface mining methods only. Very limited placement of surface facilities would be considered on these lands.	The ACEC area would be open to coal leasing and development by any mining method, provided scenic, wildlife, and watershed conflicts could be mitigated.	The ACEC area would be closed to coal leasing, development, and related activities.
	The ACEC would be closed to wood cutting and the removal of vegetative materials.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Cedar Canyon ACEC	Existing wildlife waters would be maintained and additional wildlife waters would be developed.	Same as Proposed.	Same as Proposed.	Same as Proposed.
General Area (continued)				
	A reclamation plan would be prepared to restore productivity of disturbed wildlife habitat.	No similar action.	Same as Proposed.	Same as Proposed.
Rock Art Site	The rock art (petroglyph) site, plus the surrounding area visible within a 1/2 mile radius (about 360 acres), would be closed to most surface disturbing activities (some interpretive facilities would be allowed). The following requirements would be applied in this area:	The rock art site (about 20 acres) would be closed to all surface disturbing activities. The following requirements would be applied in this 20-acre area:	Same as Alternative A.	The rock art (petroglyph) site, plus the surrounding area within a 1/2 mile radius (about 500 acres), would be closed to all surface disturbing activities. The following requirements would be applied in this area:
	-an NSO requirement would be applied to mineral leasing.	-same as Proposed.	-same as Proposed.	-same as Proposed.
	-the area would be closed to location of mining claims (a withdrawal would be pursued).	-the area would be open to the location of mining claims (a withdrawal would not be pursued).	-same as Alternative A.	-same as Proposed.
	-the area would be closed to mineral material sales.	-same as Proposed.	-same as Proposed.	-same as Proposed.
	-off-road vehicles in the area would be limited to designated roads and trails.	-off-road vehicles in the area would be limited to existing roads and trails.	-same as Alternative A.	-the area would be closed to off-road vehicles.
	-the area would be closed to use of explosives or blasting and vibroseis operations.	-same as Proposed.	-same as Alternative A.	-same as Proposed.
	-the area would be closed to use of fire retardant chemicals containing dyes.	-same as Proposed.	-same as Alternative A.	-same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Cedar Canyon ACEC ***Rock Art Site*** (continued)	The 1/2 mile radius area (500 acres) would be closed to surface mining for coal and to placement or construction of any mining related surface facilities.	The 20-acre rock art site would be closed to surface mining for coal and to placement or construction of any mining related surface facilities.	Same as Alternative A.	The entire ACEC would be closed to all coal leasing, development, and related activities.
Remainder of ACEC **(about 2,190 acres)**	About 2,190 acres outside the vista would be managed as an avoidance area for surface disturbing activities. Intensive mitigation would be required to protect relevant and important values if the area could not be avoided.	The area outside the rock art site (about 2,530 acres) would be open to surface disturbing activities with constraints to protect sensitive resource values.	Same as Alternative A.	Same as Proposed.
	The area would be open to the location of mining claims and mineral material sales.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	No similar action.	About 260 acres would be closed to the placement of coal surface facilities.	No similar action.	No similar action.
	Off-road vehicles (including over-the-snow vehicles) would be limited to designated roads and trails in the entire ACEC.	The ACEC would be open to over-the-snow vehicles. All other off-road vehicles would be limited to existing roads and trails.	The ACEC would be closed to over-the-snow vehicles. All other off-road vehicles would be limited to existing roads and trails.	Same as Alternative B.
	-seasonal off-road vehicle travel restrictions would be applied, as necessary, to protect raptor nesting, sage grouse mating and nesting, and big game wintering and birthing areas.	-same as Proposed.	-seasonal off-road vehicle travel restrictions would be applied to protect nesting raptors only.	-same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Red Creek Proposed ACEC	MANAGEMENT OBJECTIVES: To improve or enhance watershed values, channel stability, vegetation diversity and abundance, water quality, and fish habitat. To allow the recreation user the opportunity to have a high degree of interaction with the natural environment, to have moderate challenge, and to use outdoor skills. To maintain important wildlife habitat, preserve scenic resources, and reduce sedimentation.	To manage for watershed values and for Colorado River cutthroat trout habitat.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: The Greater Red Creek area (131,890 acres), consisting of the Currant Creek, Sage Creek, and Red Creek watersheds (including the existing Red Creek ACEC designation), would be designated an ACEC (Map A).	The Greater Red Creek area (consisting of the Currant Creek, Sage Creek, and Red Creek watersheds) would not be designated an ACEC. However, the existing Red Creek ACEC designation would be retained (55,880 acres) (Map 56).	Same as Alternative A (Map 57).	The Greater Red Creek area (281,880 acres), consisting of Pine Mountain, Sugarloaf Basin, the Currant Creek, Sage Creek, and Red Creek watersheds (including the existing Red Creek ACEC designation), would be designated an ACEC (Map 58).
General Area	About 76,010 acres within the Currant Creek, Sage Creek, and Red Creek watersheds would be open to mineral leasing and activities with appropriate restrictions applied as needed to protect other resource values.	About 131,890 acres within the Currant Creek, Sage Creek, and Red Creek watersheds would be open to mineral leasing and activities with appropriate restrictions applied as needed to protect other resource values.	Same as Alternative A.	About 52,270 acres within the Currant Creek, Sage Creek, and Red Creek watersheds would be open to mineral leasing and activities with appropriate restrictions applied as needed to protect other resource values. The remainder of the area would also be open to leasing consideration.
	The portion of the area that overlaps the coal potential area would be open to consideration for coal leasing and development subject to further analysis during coal activity planning to ensure actions conform with the management objectives for the proposed ACEC.	The area would be closed to coal leasing and development.	The area would be open to consideration for coal leasing and development by any mining method.	Same as Alternative A.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Red Creek Proposed ACEC *General Area* (continued)	Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with watershed, water quality, and riparian management objectives of the area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Timber harvest levels and practices would be adjusted to meet the area management objectives.	Existing timber harvest levels and practices would be continued.	Same as Proposed.	Same as Proposed.
	Fire suppression would be limited to containment at ridgetops around Currant Creek. Firefighting equipment would be limited to designated roads and trails. Heavy equipment would not operate in areas closed to surface disturbing activities. Fires in timber stands would be evaluated on a case-by-case basis.	Fire suppression would be limited to containment at ridgetops around Currant Creek. Firefighting equipment would be limited to existing roads and trails. Heavy equipment would not operate in areas closed to surface disturbing activities. Fires in timber stands would be suppressed immediately.	Fire suppression would be limited to containment at ridgetops around Currant Creek. Firefighting equipment would be limited to existing roads and trials. Fires in timber stands would be evaluated on a case-by-case basis. Emphasis would be towards containment/ confinement strategies.	Fire suppression would be limited to containment at ridgetops around Currant Creek. Firefighting equipment would be limited to designated roads and trails. Heavy equipment would not operate in areas closed to surface disturbing activities. Fires in timber stands would be suppressed immediately.
	Any increase in vegetative production would be reserved for watershed stabilization purposes.	No similar action.	No similar action.	Same as Proposed.
	Re-introduction of Colorado River cutthroat trout and other native species would be considered if consistent with watershed and riparian objectives.	No similar action.	No similar action.	Same as Proposed.
	Vegetation treatments would be designed to conform with watershed, wildlife, and fisheries management objectives.	Vegetation treatments would be designed to conform with livestock grazing, watershed, wildlife, and fisheries management objectives.	Vegetation treatments would be designed to meet livestock grazing objectives.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Red Creek Proposed ACEC	Aquifer recharge zones would be managed to protect groundwater quality.	Same as Proposed.	Same as Proposed.	Same as Proposed.
General Area (continued)	Recreation development would be kept to a minimum. On-site controls and facilities would be provided for the protection of resource values and the safety of the users only.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Camping would be allowed within 200' of water if no damage to watershed, water quality, and fisheries values would occur.	Same as Proposed.	Same as Proposed.	No camping would be allowed within 200' of streams and springs.
Sage Creek Watershed	The watershed would be an avoidance area for rights-of-way.	No similar action.	No similar action.	The watershed would be an avoidance area for rights-of-way with the exception of Sugarloaf Basin and Pine Mountain which would be exclusion areas (Table 2-4).
	Wild horse management in the area would be consistent with the Salt Wells Wild Horse Management Plan and the management objectives for this area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Off-road vehicle travel would be limited to designated roads and trails. Transportation planning would identify designed travel routes.	Off-road vehicle travel would be limited to existing roads and trails.	Same as Alternative A.	Same as Proposed.
	The watershed would be managed consistent with the Class III visual resource management classifications.	The watershed would be managed consistent with the Class III and Class IV visual resource management classifications.	Same as Alternative A.	The watershed would be managed consistent with the Class II, Class III, and Class IV visual resource management classifications.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Red Creek Proposed ACEC ***Currant Creek Watershed***	Powerlines could be allowed only at the northern corner of the watershed, provided that they span the drainage (rim to rim) and provided that area management objectives could be met.	No similar action.	No similar action.	No similar action.
	The watershed would be managed consistent with the Class II visual resource management classification.	The watershed would be managed consistent with the Class II, Class III, and Class IV visual resource management classifications.	Same as Alternative A.	Same as Alternative A.
	The watershed would be open to activities that would facilitate management of the area (i.e., fencing, signs, barriers, stream structures, etc.).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Off-road vehicles would be limited to designated roads and trails. Transportation planning would include proper road location, construction, reconstruction, design, and reclamation.	Off-road vehicles would be limited to existing roads and trails.	Same as Alternative A.	Off-road vehicles would be limited to designated roads and trails.
	Acquisitions to enhance management of the Colorado River cutthroat trout habitat would be considered.	No similar action.	No similar action.	Same as Proposed.
	The area between the rims of the Currant Creek drainage (23,740 acres) would be: -closed to surface disturbing activities.	The area between the rims of the Currant Creek drainage (23,740 acres) would be: -same as Proposed.	The area between the rims of the Currant Creek drainage (23,740 acres) would be: -managed as an avoidance area for surface disturbing activities. Activities could occur provided a plan to mitigate impacts to the Colorado River cutthroat trout could be developed.	The area between the rims of the Currant Creek drainage (23,740 acres) would be: -same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Red Creek Proposed ACEC	-closed to (excluded from) placement of rights-of-way.	-an avoidance area for rights-of-way.	-same as Alternative A.	-same as Proposed.
Currant Creek Watershed (continued)				
	-closed to mineral material sales.	-no similar action.	-no similar action.	-same as Proposed.
	-closed to mineral location and withdrawals would be pursued.	-open to mineral location.	-same as Alternative A.	-same as Proposed.
	-open to mineral leasing with a No Surface Occupancy requirement.	-same as Proposed.	-open to mineral leasing with a controlled surface use requirement.	-closed to mineral leasing.
Red Creek Watershed (Existing ACEC)	About 55,880 acres would be closed to:	About 55,880 acres would be open to:	Same as Alternative A.	About 55,880 acres would be closed to:
	-mineral leasing	-mineral leasing		-mineral leasing
	-mineral material sales	-mineral material sales		-mineral material sales
	-mineral location (withdrawals would be pursued)	-mineral location		-mineral location (withdrawals would be pursued)
	-surface disturbing activities.	-surface disturbing activities with a requirement to submit mitigation plans for mitigating impacts to watershed, water quality, wildlife, scenic, and fisheries values.		-surface disturbing activities -exploration for sodium.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Red Creek Proposed ACEC ***Red Creek Watershed (Existing ACEC)*** (continued)	The existing right-of-way concentration area would be closed to new rights-of-way for at least 10 years to allow soils to stabilize. An alternate route for rights-of-way would be established outside the watershed.	The right-of-way concentration area would remain open to consideration of future rights-of-way.	The existing right-of-way concentration area would remain open for future use. An additional area east of the existing concentration area would be made available for future use.	Same as Proposed.
	A right-of-way grant has been issued to Questar Pipeline Company to build the Mainline 58 Pipeline across public lands through the Red Creek escarpment. Future rights-of-way across public lands through this area (for linear utilities, transmission lines, communication sites, roads and highways, etc.), that would adversely affect the stabilization of the watershed would be prohibited. Should the Mainline 58 Pipeline not be built, the area would be considered closed and any subsequent right-of-way proposal, to either replace or substitute for the Mainline 58 Pipeline, or any similar future proposed action across public lands in the area, would be prohibited. The area would remain closed to any new right-of-way development for at least a 10-year period to allow for watershed stabilization.	No similar action.	No similar action.	No similar action.
	Off-road vehicles would be limited to designated roads and trails.	Same as Proposed.	Off-road vehicles would be limited to existing roads and trails.	Off-road vehicles would be prohibited and the area closed. Trails in the area would be closed except for the main County road through Richards Gap and the Red Creek Ranch road.
	The watershed would be open to activities that would meet the management objectives for the area (i.e., fencing, interpretive signs, barriers, sediment structures, etc.).	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Red Creek Proposed ACEC ***Red Creek Watershed (Existing ACEC)*** (continued)	The watershed would be managed consistent with the Class II visual resource management classification.	Same as Proposed.	The watershed would be managed consistent with the Class II and Class III visual resource management classifications.	Same as Proposed.
	The Red Creek watershed would be managed to minimize accelerated erosion and sedimentation into the Green River/Colorado River system.	No similar action.	No similar action.	Same as Proposed.
Greater Sand Dunes ACEC	MANAGEMENT OBJECTIVE: To preserve and protect the integrity of the unique resource values for future use and enjoyment, including the unusual features associated with the sand dunes, Boars Tusk, the biological interrelationships supported by the dunes, and a variety of recreation uses.	Same as Proposed.	Same as Proposed.	Same as Proposed.
General Area	MANAGEMENT ACTIONS: The existing Greater Sand Dunes ACEC designation (38,650 acres) would be retained.	Same as Proposed.	The Greater Sand Dunes ACEC would be reduced to 25,050 acres.	Same as Proposed.
	Surface disturbing activities would require a paleontological clearance in specific areas.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Surface disturbing activities would be managed to avoid recreation sites.	Surface disturbing activities would be managed to avoid the area within 1/2 mile of recreation sites.	Surface disturbing activities would be allowed within the vicinity of recreation sites.	Surface disturbing activities would be managed to avoid recreation sites and the surrounding areas within a 1-mile radius.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Sand Dunes ACEC *General Area* (continued)	The ACEC, and the area within 1 mile or the visual horizon (whichever is closer) of the ACEC, would be managed as an avoidance area for rights-of-way, particularly large powerlines.	Same as Proposed.	The ACEC, and the area within 1/2 mile or the visual horizon (whichever is closer) of the ACEC, would be an avoidance area for rights-of-way, particularly large powerlines.	Same as Proposed.
	The entire ACEC would be closed to mineral material sales.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for the area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Maintenance and use of existing necessary rangeland improvements would be allowed.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Wild horse management in the ACEC would be consistent with wild horse plans and ACEC objectives. No horse traps would be built in the ACEC.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Wildlife habitat improvement projects would be developed in the ACEC, as necessary.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Interpretive materials and educational programs would be developed describing wildlife and cultural values in the ACEC.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Native vegetation would be maintained and protected.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Sand Dunes ACEC ***General Area*** (continued)	The ACEC would be managed for a variety of recreation uses.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Two roads in the ACEC would be designated as part of the Tri-Territory Backcountry Byway.	No roads would be designated as part of the Tri-Territory Backcountry Byway.	Same as Proposed.	Same as Proposed.
	The ACEC would be managed consistent with the Class II visual resource management classification. Management activities would be designed and located to blend with the natural landscape.	Same as Proposed.	The ACEC would be managed consistent with the Class III visual resource management classification where activities would be designed to partially blend with the landscape.	Same as Proposed.
Greater Sand Dunes ACEC ***Western Portion*** ***(25,250 acres)***	The western portion of the ACEC (about 25,250 acres) would remain closed to mineral location. The oil shale withdrawal would remain in effect until a comprehensive study was completed for the area and, if necessary, lands could be identified to be withdrawn for protection of their resource values.	Same as Proposed.	Same as Proposed.	The entire ACEC (41,640 acres) would be closed to mineral location (withdrawals would be pursued).
	This portion of the ACEC would be closed to oil and gas leasing and development and to geophysical exploration activities.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 4,360 acres of this area, that is within the coal development potential area, would be closed to consideration for Federal coal leasing and development.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Sand Dunes ACEC ***Western Portion*** ***(25,250 acres)*** (continued)	Management of this area is guided by the "Interim Management Guidelines for Lands Under Wilderness Review" (includes Buffalo Hump and Sand Dunes WSAs).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	This area would be closed to off-road vehicle use.	Off-road vehicles would be limited to designated roads and trails.	Same as Proposed.	Same as Proposed.
	To improve manageability of the ACEC, acquisition of about 1,920 acres within this area would be pursued.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Eastern Portion	About 16,390 acres would be open:	About 16,390 acres would be open:	About 16,390 acres would be open:	About 16,390 acres would be open:
	-to further consideration for oil and gas leasing contingent upon completion of a comprehensive site specific management plan;	-to further consideration for oil and gas leasing;	-same as Alternative A;	-same as Alternative A;
	-no similar action;	-to further development on stabilized dunes within 10,390 acres;	-to further development on stabilized and non-stabilized sand areas;	-to further development on non-stabilized dunes only;
	-no similar action;	-to additional wells up to three wells per section (6,000 acres);	-to additional wells up to four wells per section;	-to additional wells, up to three per section in the existing developed area (6,000 acres), and one well per section on undeveloped areas (10,390 acres);
	-no similar action.	-to geophysical activities.	-same as Alternative A.	-same as Alternative A.
	Developments in the area would be designed to allow continued access to recreation sites.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Sand Dunes ACEC ***Eastern Portion*** (continued)	Areas overlapping the coal potential area (about 9,840 acres) would be closed to surface mining and any surface facilities.	Same as Proposed.	Areas overlapping the coal potential area (approximately 9,840 acres) would be open to surface mining and surface facilities.	Same as Proposed.
	Seasonal restrictions would be applied to protect big game.	Same as Proposed.	Seasonal restrictions would not be applied to protect big game.	Same as Proposed.
	Surface and groundwater would be protected from contamination. Dune ponds would not be utilized as water sources for development activities.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Pipelines crossing stabilized dunes would be placed on the surface.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Abandoned facilities would be removed.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 10,500 acres of unstabilized dunes would be designated open to off-road vehicle travel.	Same as Proposed.	About 5,500 acres of unstabilized dunes would be open to off-road vehicle travel.	Same as Proposed.
	About 5,810 acres of stabilized dunes would be designated as limited to existing roads and trails for off-road vehicle travel.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Wild horse use in the area would be consistent with the Divide Basin Wild Horse Management Plan and the management objectives for the area. No wild horse traps would be constructed within the area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Crookston Ranch and Boars Tusk Portion	The historic and geologic values of Crookston Ranch and Boars Tusk would be preserved. Crookston Ranch would be used for interpretation of ranching history.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Sand Dunes ACEC ***Crookston Ranch and Boars Tusk Portion*** (continued)	Crookston Ranch and Boars Tusk (about 130 acres) would be:	The area within 1/2 mile radius of Crookston Ranch (about 500 acres) and the 90-acre Boars Tusk would be:	Same as Proposed.	Same as Alternative A.
	-closed to surface disturbing activities;	-same as Proposed;	-same as Proposed;	-same as Proposed;
	-closed to mineral material sales;	-same as Proposed;	-same as Proposed;	-same as Proposed;
	-closed to the use of explosives or blasting;	-same as Proposed;	-same as Proposed;	-same as Proposed;
	-closed to surface coal mining activities and facilities but open for subsurface mining;	-same as Proposed;	-same as Proposed;	-closed to further consideration for coal leasing;
	-open to activities designed to meet management objectives of the sites.	-same as Proposed;	-same as Proposed.	-same as Alternative A.
	The area within 1/2 mile radius of Boars Tusk (about 500 acres) would be closed to blasting or explosive charges.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Off-road vehicle travel would be limited to designated roads and trails; however, the road around Boars Tusk would be closed.	Off-road vehicle travel would be limited to existing roads and trails; however, the road around Boars Tusk would be closed.	Off-road vehicle travel would be limited to existing roads and trails. The road around Boars Tusk would not be closed.	Same as Proposed.
	Maximum fire suppression activity would be used to protect the standing structures at Crookston Ranch.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Natural Corrals ACEC	MANAGEMENT OBJECTIVE: To protect and enhance cultural, historical, recreation, and geologic values within the ACEC.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: The Natural Corrals ACEC (1,273 acres) designation would be retained.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The entire area would be open to consideration for oil and gas leasing.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The entire area would be closed to surface disturbing activities.	Same as Proposed.	Only section 18 would be closed to surface disturbing activities.	Same as Proposed.
	The entire 1,273 acres would be closed to surface coal mining and any related surface operations and impacts.	1,113 acres would be closed to surface coal mining and any related facilities.	640 acres would be closed to surface coal mining and related surface operations and impacts.	Same as Proposed.
	About 357 acres would remain closed to mineral location and the existing withdrawal would be retained.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The entire area would be closed to mineral material sales.	Same as Proposed.	About 640 acres would be closed to mineral material sales.	Same as Proposed.
	The NRHP site would be closed to all geophysical activities.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	1/2 mile of road and the NRHP site would be closed to off-road vehicle travel. The remainder of the area would be limited to designated roads and trails.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The area would be open for activities such as interpretive facilities, fencing, etc. that would increase public awareness of the area and ensure protection of resources.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Natural Corrals ACEC (continued)	The area would be managed consistent with the Class III and Class IV visual resource management classifications and activities would be located and designed to blend with the landscape.	The area would be managed consistent with the Class III visual resource management classification.	The area would be managed consistent with the Class IV visual resource management classification.	Same as Proposed.
	Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives of the area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The wild horse herd use would continue and monitoring would occur to ensure resources would be protected. No wild horse traps would be constructed in the area.	Same as Proposed.	Same as Proposed.	Same as Proposed
	Opportunities would be provided for various recreation activities such as camping, picnicking, etc.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Oregon Buttes ACEC	MANAGEMENT OBJECTIVE: To protect and enhance the scenic integrity of the area as a historic landmark and to protect wildlife values.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: The existing ACEC (3,450 acres) designation would be retained.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The area would be closed to all surface disturbing activities; mineral material sales; and off-road vehicle travel.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Oregon Buttes ACEC (continued)	The area would be open to activities such as fencing, the placing of interpretive signs, or construction barriers.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives of the area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Wild horse management in the area would be consistent with the Divide Basin Wild Horse Management Plan and the management objectives for the area. No wild horse traps would be constructed within the area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The area would be managed consistent with the Class II visual resource management classification and activities would be located and designed to blend with the landscape.	Same as Proposed.	The area would be managed consistent with the Class II and Class III visual resource management classifications.	Same as Proposed.
Pine Springs ACEC	MANAGEMENT OBJECTIVE: To enhance and protect cultural, historic, and prehistoric resource values in the area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: The existing 90-acre ACEC would be expanded to 6,030 acres (Map A).	The existing 90-acre ACEC designation would be retained (Map 56).	Same as Alternative A (Map 57).	Same as Proposed (Map 58).
	The area (6,030 acres) would be:	The area (90 acres) would be:	The area (90 acres) would be:	The area (6,030 acres) would be:
	-closed to surface disturbing activities;	-same as Proposed;	-same as Proposed;	-same as Proposed;
	-closed to mineral material sales;	-same as Proposed;	-same as Proposed;	-same as Proposed;

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Pine Springs ACEC (continued)	-closed to mineral location;	-same as Proposed;	-same as Proposed;	-same as Proposed;
	-5,300 acres would be closed to off-road vehicle travel; 730 acres would be limited to existing roads and trails; and the existing road through Pine Springs would be open to vehicle use.	-Off-road vehicle travel would be limited to designated roads and trails.	-same as Proposed.	-closed to off-road vehicle travel.
	-open to activities that would meet management objectives for the area and to maintenance for existing spring developments.	-same as Proposed.	-same as Proposed.	-same as Proposed.
	-managed consistent with the Class II, Class III, and Class IV visual resource management classifications and activities would be located and designed to partially retain the character of the landscape.	-managed consistent with the Class III visual resource management classification.	-Same as Alternative A.	-managed consistent with the Class II and Class IV visual resource management classifications and activities would be designed and located to blend into the natural landscape.
	The existing Pine Springs site (90 acres) would be closed to all geophysical activities, and use of explosives.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
South Pass Historic Landscape Proposed ACEC	MANAGEMENT OBJECTIVE: To protect and maintain the visual and historical integrity of the historic trails and surrounding viewscape in the South Pass area.	To protect the visual and historical integrity of the historic trails and adjacent geographic features.	Same as Alternative A.	Same as Alternative A.
	MANAGEMENT ACTIONS: No similar action.	The Greater South Pass Historic Landscape area (87,580 acres) would not be designated an ACEC (Map 56).	Same as Alternative A (Map 57).	The Greater South Pass Historic Landscape area (87,580 acres) would be designated an ACEC (Map 58).
	No similar action.	Areas within 1/4 mile of the historic trails within the Greater South Pass Historic Landscape would be considered an avoidance area for surface disturbing activities.	Same as Alternative A.	The 87,580 acres would be closed to surface disturbing activities.
	No similar action.	About 46,180 acres of the Greater South Pass Historic Landscape would be open to surface disturbing activities. The remaining 41,400 acres would be closed to surface disturbing activities (within WSAs).	Same as Alternative A.	The 87,580 acres would be closed to surface disturbing activities.
	No similar action.	Wild horse management in the area would be consistent with the Divide Basin Wild Horse Management Plan and the management objectives for the area.	Same as Alternative A.	Wild horse management in the area would be consistent with the Divide Basin Wild Horse Management Plan and the management objectives for the area. No wild horse traps would be constructed within the area.
	No similar action.	The existing Oregon Buttes ACEC designation would be retained.	Same as Alternative A.	The existing Oregon Buttes ACEC would become a part of the Greater South Pass Historic Landscape ACEC.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
South Pass Historic Landscape Proposed ACEC (continued)	No similar action.	Off-road vehicle travel would be limited to existing roads and trails on 46,180 acres, 35,700 acres would be limited to designated roads and trails, and 5,700 acres would be closed to off-road vehicle travel.	Same as Alternative A.	Off-road vehicle travel would be limited to designated roads and trails on 46,180 acres and 41,400 acres would be closed to off-road vehicle travel.
	The South Pass Historic Landscape area (53,780 acres) would be designated an ACEC (Map 29).	No similar action.	No similar action.	No similar action.
	A right-of-way grant has been authorized, but not yet issued, for the Altamont Pipeline Company to build a pipeline across public lands through the South Pass Historic Landscape Area. Should this grant be issued, it would be a one-time right-of-way authorization through the South Pass Historic Landscape Area. Future rights-of-way across public lands through this area (for linear utilities, transmission lines, communication sites, roads and highways, etc.), that would adversely affect the values of the historic landscape would be prohibited. In addition, should the Altamont Pipeline not be built, the South Pass Historic Landscape Area would be considered closed and any subsequent right-of-way proposal, to either replace or substitute for the Altamont Pipeline, or any similar future proposed action across public lands in the area, would be prohibited (Map 29).	No similar action.	No similar action.	No similar action.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
South Pass Historic Landscape Proposed ACEC (continued)	Areas visible from the trails within the South Pass Historic Landscape area (about 33,700 acres) would be closed to surface disturbing activities and would be an exclusion area for rights-of-way.	No similar action.	No similar action.	No similar action.
	Areas which are visibly shielded by topography within the South Pass Historic Landscape (20,080 acres) would be open to surface disturbing activities and would be an avoidance area for rights-of-way.	No similar action.	No similar action.	No similar action.
	Off-road vehicle travel would be limited to designated roads and trails on 33,700 acres and to existing roads and trails on 20,080 acres.	No similar action.	No similar action.	No similar action.
	The area would be managed consistent with the Class II visual resource management classification.	Same as Proposed.	The area would be managed consistent with the Class III visual resource management classification.	Same as Proposed.
	Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives of the area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	No similar action.	No similar action.	No similar action.
	Wild horse management in the area would be consistent with the Divide Basin Wild Horse Management plan and the management objectives for the area. No wild horse traps would be constructed on 33,700 acres that are visible from the trails.	No similar action.	No similar action.	No similar action.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Special Status (Candidate) Plant Species Proposed ACEC	MANAGEMENT OBJECTIVE: To prevent destruction or loss of special status (candidate) plant communities and their important habitat, to provide opportunities for enhancing or expanding their habitat, and to prevent the need for any sensitive or candidate plant species becoming listed as threatened and endangered plants.	To protect the special status plant species and their important habitats.	Same as Alternative A.	Same as Alternative A.
	MANAGEMENT ACTIONS: Known locations of essential habitat and populations of special status (candidate) plant species, *Arabis pusilla*, *Astragalus proimanthus*, *Descurainia torulosa*, and *Thelesperma pubescens* (about 900 acres) would be designated an ACEC (Map A).	No ACEC would be designated for special status plant species (see Map 56).	Same as Alternative A (see Map 57).	An ACEC would be designated to protect known special status (candidate) plant species locations, known essential habitats, and potential habitat areas (see Map 58).
	As additional populations of these special status (candidate) plant species and their essential habitat are located, more area could be added to the ACEC.	No similar action.	No similar action.	Same as Proposed.
	Known locations of special status plant species and their essential habitat would be:	Known locations of special status plant species communities would be:	Known locations of special status plant species communities would be:	Known locations of special status plant species and their essential and potential habitat would be:
	-Closed to surface disturbing activities	-Same as Proposed.	-Same as Proposed.	-Same as Proposed.
	-Closed to extraction of mineral materials and such authorizations.	-Same as Proposed.	-Same as Proposed.	-Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Special Status (Candidate) Plant Species Proposed ACEC (continued)	-Closed to the location of new mining claims and mining activity (withdrawals from mineral location would be pursued).	-Would be open to the location of mining claims and mining activity (no withdrawals from mineral location would be pursued).	-Same as Alternative A.	-Same as Proposed.
	-Closed to surface occupancy.	-Same as Proposed.	-Same as Proposed.	-Same as Proposed.
	-Closed to use of explosives or blasting (see Map A).	-Not closed to use of explosives or blasting (see Map 56).	-Same as Alternative A (see Map 57).	-Same as Proposed (see Map 58).
	-Closed to off-road vehicle travel.	-Limited to existing roads and trails for off-road vehicle travel.	-Same as Proposed.	-Same as Proposed.
	Activities such as fencing, interpretive signs, or barriers to ensure protection to the plant species would be considered for both existing and potential habitat.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Searches for special status plants would be required on any potential habitat and any needed avoidance and protection measures would be prescribed prior to authorizing implementation of any activities that would disturb or destroy vegetation.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Special Status (Candidate) Plant Species Proposed ACEC (continued)	Known plant species population areas would be closed to any surface disturbing fire suppression activities unless necessary for species survival. The use of fire suppression ground vehicles would be consistent with ORV designations. The type of suppression activity allowed, if any, would be determined through site specific analysis.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives of the area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Wild horse management would be consistent with the wild horse management plan and management objectives for the area. No wild horse traps would be constructed within the area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Acquisition of approximately 1,920 acres of special status plant species habitat would be pursued.	Acquisition would not be pursued.	Same as Alternative A.	Same as Proposed.
Steamboat Mountain Proposed ACEC	MANAGEMENT OBJECTIVES: To enhance, maintain, and monitor the water, vegetation, soil, and wildlife resources to ensure biological diversity and a healthy ecosystem.	No similar objective.	No similar objective.	No similar objective.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Steamboat Mountain Proposed ACEC (continued)	To maintain the unique diverse habitat (big sagebrush, aspen, limber pine, and mountain shrub community) in the Steamboat Mountain area. This especially pertains to all stabilized sand dunes along Steamboat Rim, Indian Gap, and in the Johnson, Lafonte, and Box Canyon areas.	No similar objective.	No similar objective.	No similar objective.
	To provide suitable habitat to maintain the continued existence of the Steamboat elk herd and deer herd populations.	To provide suitable habitat to maintain the Steamboat elk herd.	Same as Alternative A.	Same as Alternative A.
	MANAGEMENT ACTIONS: The Steamboat Mountain area (43,270 acres) would be designated an ACEC (Map A).	The Steamboat Mountain area (43,270 acres) would not be designated an ACEC.	Same as Alternative A.	Same as Proposed (Map 58).
	Further consideration for oil and gas leasing would be contingent upon completion of a comprehensive activity or implementation plan.	Oil and gas leasing would continue provided that plans of development assure that the elk herd would not be adversely affected.	Same as Alternative A.	Oil and gas leasing would continue with a requirement that no surface disturbing activities be allowed.
	Any determination to close parts of the area to mineral location and pursue withdrawals would be deferred to completion of a comprehensive activity or implementation plan for the area. In the interim, those parts of the area not covered by existing withdrawals would remain open to mineral location and a plan of operations would be required for any locatable mineral activity.	Except for existing withdrawals, the area would be open to mineral location and a plan of operations would be required for locatable mineral disturbances greater than 5 acres.	Same as Alternative A.	The entire area would be closed to mineral location and a protective withdrawal would be pursued.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Steamboat Mountain Proposed ACEC (continued)	The area would be open to consideration for coal leasing and development by subsurface mining methods only. Related surface operations and impacts would only be allowed if they conform with the management objectives for the area.	The area would be closed to coal leasing and development.	The area would be open to consideration for coal leasing and development by any mining method provided that the elk herd would not be adversely affected.	Same as Alternative A.
	The area would be closed to mineral material sales until a comprehensive activity or implementation plan is completed.	Mineral material sales would be allowed provided that the elk herd would not be adversely affected.	Same as Alternative A.	The area would be closed to mineral material sales.
	The area would be managed as an avoidance area for rights-of-way. Intensive mitigation would be required to ensure that the elk and deer herds would not be adversely affected, if the area could not be avoided.	The area would not be managed as an avoidance area for rights-of-way. Linear rights-of-way would be allowed provided that the elk herd would not be adversely affected.	Same as Alternative A.	Same as Proposed.
	Seasonal restrictions would be applied to land and resource uses, as needed, to protect the elk and deer wintering and birthing areas.	Same as Proposed.	Seasonal restrictions would not be applied to land and resource uses.	Same as Proposed.
	The area would be managed consistent with the Class II and Class III visual resource management classifications.	The entire area would be managed consistent with the Class II, Class III, and Class IV visual resource management classifications.	Same as Alternative A.	Same as Proposed.
	Off-road vehicle travel would be limited to designated roads and trails. Seasonal closures may be implemented to protect the elk and deer wintering and birthing areas.	Off-road vehicle travel would be limited to existing roads and trails. Seasonal closures may be implemented to protect wintering elk.	Off-road vehicle travel would be limited to existing roads and trails. No seasonal closures would be implemented.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Steamboat Mountain Proposed ACEC (continued)	Vegetation management would be designed to maintain, preserve, or enhance biological diversity while providing elk and deer cover and forage requirements.	Vegetation management would be designed to maintain elk cover and forage requirements.	Same as Alternative A.	Same as Proposed.
	Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives of the area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Wild horse herds would continue to be maintained within wild horse management population objectives.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Areas of overlapping big game crucial winter range and parturition areas (about 27,000 acres) adjacent to the proposed ACEC area would be managed to allow progressive development of one or two areas at a time.	Same as Proposed.	No similar action.	Same as Proposed.
White Mountain Petroglyphs ACEC	MANAGEMENT OBJECTIVE: To protect cultural resource values from degradation and provide for wildlife and scenic values, and Native American concerns.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	MANAGEMENT ACTIONS: The existing White Mountain ACEC (20 acres) designation would be retained (Map A).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The entire area would be open to mineral leasing.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
White Mountain Petroglyphs ACEC (continued)	The entire area would be closed to: -surface disturbing activities. -mineral material sales. -mineral location (the existing withdrawal would be retained).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The entire area (20 acres) would be closed to off-road vehicle travel.	Off-road vehicle travel would be limited to existing roads and trails.	Same as Alternative A.	Same as Proposed.
	The entire area would be closed to the use of explosives or blasting.	No similar action.	No similar action.	Same as Proposed.
	The entire area would be closed to the use of fire retardant chemicals containing dyes.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The entire area would be managed consistent with the Class IV visual resource management classification.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives for this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The area within 300' of the petroglyphs would be closed to vibroseis activity.	No similar action.	No similar action.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
White Mountain Petroglyphs ACEC (continued)	The area visible within 1/2 mile of the ACEC would be closed to: -surface disturbing activities. -mineral material sales. -the use of explosives and blasting.	No similar action.	No similar action.	A 1/2 mile area surrounding the petroglyphs (about 500 acres) would be closed to: -same as Proposed.
	Off-road vehicle travel in the area visible within 1/2 mile of the rock art site would be limited to designated roads and trails.	No similar action.	No similar action.	Same as Proposed.
OTHER MANAGEMENT AREAS				
Monument Valley Management Area (69,940 acres)	MANAGEMENT OBJECTIVE: To provide protection of scientific (paleontological and cultural), geologic, wildlife, watershed, and scenic values.	To manage the area for multiple use providing protection for wildlife, geologic, raptor, cultural, watershed, scenic, and scientific values.	Same as Alternative A.	Same as Proposed.
	MANAGEMENT ACTIONS: Designation of the area as an ACEC would be deferred until a determination could be made if specific resources meet the relevance and importance criteria (Map A).	The area would not be designated an ACEC.	Same as Alternative A.	The area would be designated an ACEC (Map 58).
	Any determination to revoke the oil shale withdrawal would be deferred to completion of a comprehensive study of the area to determine any other needs for closures to and withdrawals from mineral location to protect important resources in the area.	The area would be closed to mineral location and the oil shale withdrawal would not be revoked.	Same as Proposed.	The area would be closed to mineral location. The oil shale withdrawal would be revoked. A new withdrawal would be pursued to protect the scientific, geologic, wildlife, watershed, and scenic values.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Monument Valley Management Area (continued)	The area would be open to consideration for mineral leasing.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The area would be open to consideration for mineral material sales.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The area would be given first priority for Class II cultural and paleontological surveys. A search for cultural and paleontological resources would be required prior to conducting surface disturbing or excavation activities.	A search for cultural and paleontological resources would be required prior to conducting surface disturbing or excavation activities.	Same as Alternative A.	Same as Proposed.
	Slopes greater than 25% and areas with highly erosive soils would be avoidance areas for surface disturbing activities.	Same as Proposed.	Same as Proposed.	Slopes greater than 20% and highly erosive soils would be closed to surface disturbing activities.
	Off-road vehicle travel would be limited to designated roads and trails.	Off-road vehicle travel would be limited to existing roads and trails.	Same as Alternative A.	Same as Proposed.
	No new recreation sites would be developed and limited interpretive signing would be accomplished.	No new recreation sites would be developed and no interpretive signing would be accomplished.	No new recreation sites would be developed. Extensive interpretive signing would be accomplished.	Same as Proposed.
	The area would be managed consistent with the Class II visual resource management classification, and activities would be located and designed to blend with the landscape.	The area would be managed consistent with the Class II and Class IV visual resource management classifications. Activities in Class II areas would be located and designed to blend with the landscape. Activities in Class IV areas could cause major modification to the landscape.	Same as Alternative A.	Same as Alternative A.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Monument Valley Management Area (continued)	Livestock grazing objectives would be evaluated and, as needed, modified to be consistent with the management objectives of this area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Wild horse management would be consistent with the wild horse management plan for the area. Construction of wild horse traps and range improvements would be allowed provided the management objectives of the area could be met.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Pine Mountain Management Area	MANAGEMENT OBJECTIVES: 1) to improve watershed condition and enhance watershed values; 2) to improve riparian areas to proper functioning condition, as a minimum; 3) to provide opportunities for dispersed recreation uses in the area, consistent with the primary watershed, riparian, and wildlife objectives; 4) to sustain important wildlife habitat, particularly raptor habitat; and 5) to reduce erosion.	To maintain watershed values.	Same as Alternative A.	1) To improve and/or enhance watershed and channel stability and to protect and maintain watershed quality and to minimize sedimentation from human activities; 2) To manage resource uses in support of watershed and Colorado River cutthroat trout management objectives.
	MANAGEMENT ACTIONS: The area would not be designated an ACEC, but would be maintained as a geographic management unit.	No similar action.	No similar action.	The area would be designated as a part of the Greater Red Creek ACEC.
	About 64,200 acres would be open to mineral leasing and activities with controlled surface use restrictions applied as needed to protect other resource values (Table 2-8).	About 64,200 acres would be open to mineral leasing and activities with minimal restrictions applied as needed to protect other resource values (see Table 2-20).	Same as Alternative A (see Table 2-21).	Same as Proposed (see Table 2-22).

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Pine Mountain Management Area (continued)	Livestock grazing objectives would be evaluated and, where necessary, adjusted to meet watershed, water quality, and riparian objectives. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Activities would be designed to help maintain or achieve proper functioning condition of streams.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Commercial timber areas would be managed to maintain or improve the health, vigor, and diversity of forest stands with emphasis on enhancing other resources values.	Commercial timber areas would be managed to maintain or improve the health and vigor of forest stands with emphasis on commercial timber production.	Same as Alternative A.	Same as Proposed.
	Determination of fire suppression activities would vary on a case-by-case basis, would be multiple use oriented, and not focus on only commercial timber stands.	Fires in timber stands would be suppressed immediately.	Same as Proposed.	Same as Alternative A.
	The entire area would be managed as a right-of-way avoidance area.	No similar action.	No similar action.	The entire area would be managed as a right-of-way exclusion area.
	Re-introduction of Colorado River cutthroat trout and other native species would be considered if consistent with watershed and riparian objectives.	No similar action.	No similar action.	Same as Proposed.
	Aquifer recharge zones would be managed to maintain or enhance groundwater quality and aquifer function.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Pine Mountain Management Area (continued)	Vegetation treatments would be designed to meet watershed, wildlife, and fisheries management objectives.	Vegetation treatments would be designed to meet livestock grazing, watershed, wildlife, and fisheries management objectives.	Vegetation treatments would be designed to meet livestock objectives.	Same as Proposed.
	Recreation development would be kept to a minimum. On-site controls and facilities would be provided for the protection of resource values and the safety of the users only.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Off-road vehicle travel would be limited to designated roads and trails. Transportation planning would identify designated travel routes.	Off-road vehicle travel would be limited to existing roads and trails.	Same as Alternative A.	Same as Proposed.
	Camping would be allowed within 200' of water if no damage to watershed, water quality, and fisheries values would occur.	Same as Proposed.	Same as Proposed.	No camping would be allowed within 200' of streams and springs.
	The entire area would be managed consistent with the Class III visual resource management classification.	The entire area would be managed consistent with the Class IV visual resource management classification.	Same as Alternative A.	Same as Alternative A.
Four J Basin Portion	MANAGEMENT ACTIONS: Surface disturbance would be severely limited or not allowed. No surface occupancy would be allowed on the escarpment and toe slopes and highly erosive soils.	Surface disturbance would not be severely limited. There would be no blanket requirement for a no surface occupancy restriction on the escarpment and toe slopes and erosive soils.	Same as Alternative A.	Surface disturbance would be severely limited or not allowed. Areas other than escarpments, toe slops, and highly erosive soils may be considered for no surface occupancy.
	Mineral leasing would be allowed provided area management objectives could be met and logical areas found for placement of access and facilities.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Pine Mountain Management Area ***Four J Basin Portion*** (continued)	Livestock grazing would be managed to allow for optimum vegetation recovery and for uplands and riparian areas to reach proper functioning condition. If necessary, forage would be reserved for watershed purposes. Full consideration would be given to wildlife habitat needs.	Current levels of livestock grazing use would continue. Livestock grazing would be managed to allow for optimum grazing use.	Same as Alternative A.	Same as Proposed.
	Any determinations to close parts of the area to mineral location and pursue withdrawals would be deferred to completion of a comprehensive activity or implementation plan for the area. In the interim, those parts of the area not covered by existing withdrawals would remain open to mineral location.	No similar action.	No similar action.	Same as Proposed.
	Human activity, recreation use, etc., would be restricted from February 1 through July 31, where needed, to protect nesting raptors. Exception from this restriction may be approved if conditions described in Appendix 7-1 apply.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Red Desert Watershed Management Area	MANAGEMENT OBJECTIVE: To manage for all resource values in the Red Desert area with emphasis on protection of visual resources, watershed values, and wildlife resources.	Same as Proposed.	To manage for all resource values in the Red Desert area with emphasis on commodity production.	Same as Proposed.
	MANAGEMENT ACTIONS: The Red Desert Watershed area would be considered the portion of the Great Divide Basin north of the checkerboard in the Green River planning area (341,060 acres).	The Red Desert Watershed area would be considered the entire Great Divide Basin within the Green River planning area (481,930 acres).	Same as Alternative A.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Red Desert Watershed Management Area (continued)	Developments and land use activities would conform with the concepts of open space. Management would emphasize retaining the visual resource values of the area and visual inventories would be conducted prior to allowing activities that may affect these values.	Same as Proposed.	No similar action.	Same as Proposed.
	This would be accomplished through facility design and placement and using topography to shield activities, using neutral colors so facilities blend with the landscape, identifying backcountry byways, and providing viewing points for the public.	Same as Proposed.	No similar action.	Same as Proposed.
	Large areas of unobstructed views would be provided for the enjoyment of scenic qualities (Map A).	No similar action.	No similar action.	Same as Proposed.
	The area would be managed consistent with the Class II and Class III visual resource management classifications.	The area would be managed consistent with the Class II, Class III, and Class IV visual resource management classification.	Same as Alternative A.	The area would be managed consistent with the Class II and Class IV visual resource management classifications.
	About 2,500 acres would be closed to surface disturbing activities to protect special status plant species and important historic resource values in the area.	Same as Proposed.	Same as Proposed.	About 46,000 acres would be closed to surface disturbing activities to protect special status plant species and important historic cultural and geologic resource values in the area.
	About 2,860 acres would be open to consideration for coal leasing and development.	About 46,735 acres would be open to consideration for coal leasing and development.	Same as Alternative A.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Red Desert Watershed Management Area (continued)	About 5,260 acres would be closed to mineral material extraction, sales, and mineral location to protect portions of the South Pass Historic Landscape. Withdrawal from mineral location would be pursued.	About 2,500 acres would be closed to mineral material extraction and sales to protect special status plant species and resource values. Closure and withdrawal from mineral location would not be pursued.	Same as Alternative A.	Same as Proposed.
	An east-west right-of-way window would be identified as the preferred route for rights-of-way.	A preferred right-of-way route and window would not be identified.	Same as Alternative A.	Same as Alternative A.
	Overhead powerlines would not be allowed in the area.	Overhead powerlines would be allowed in the area.	Same as Alternative A.	Same as Proposed.
	Approximately 95,580 acres would be closed to ORV use, and the remainder of the area would be limited to designated roads and trails.	About 5,700 acres would be closed to off-road vehicle use. In the remainder of the area, off-road vehicle use would either be limited to designated roads and trails, or existing roads and trails.	Approximately 95,580 acres would be closed to ORV use, and the remainder of the area would be limited to existing roads and trails.	Approximately 95,580 acres would be closed to ORV use. In the remainder of the area, off-road vehicle use would either be limited to designated roads and trails, or existing roads and trails.
	Livestock grazing objectives would be evaluated, and as needed, modified to be consistent with the management objectives of the area. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Forage would continue to be provided for wild horses in the area. Vegetation resources would be managed for continued livestock grazing and wildlife uses in accordance with the management objectives for the area.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sugarloaf Basin Management Area	MANAGEMENT OBJECTIVES: 1) to improve watershed condition and enhance watershed values; 2) to improve riparian areas to proper functioning condition, as a minimum; 3) to provide opportunities for dispersed recreation uses in the area, consistent with the primary watershed and riparian objectives; and 4) to maintain and protect important wildlife habitat.	To maintain watershed values.	Same as Alternative A.	1) To improve and/or enhance watershed and channel stability and to protect and maintain watershed quality and to minimize sedimentation from human activities; and 2) To manage resource uses in support of watershed management objectives.
	MANAGEMENT ACTIONS: The area would not be designated an ACEC, but would be maintained as a geographic management unit.	No similar action.	No similar action.	The area would be designated as a part of the Greater Red Creek ACEC.
	About 85,880 acres would be open to mineral leasing and activities with controlled surface use restrictions applied to protect other resource values (Table 2-8).	About 85,880 acres would be open to mineral leasing and activities with minimal restrictions applied as needed to protect other resource values (see Table 2-20).	Same as Alternative A (see Table 2-21).	Same as Proposed (see Table 2-22).
	The entire area would be managed as a right-of-way avoidance area.	No similar action.	No similar action.	The entire area would be managed as a right-of-way exclusion area.
	Livestock grazing objectives would be evaluated and, where necessary, adjusted to meet watershed, water quality, and riparian objectives. Grazing systems would be designed to achieve desired plant communities and proper functioning condition of watersheds (upland and riparian).	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Activities would be designed to help maintain or achieve proper functioning condition of streams.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sugarloaf Basin Management Area (continued)	Commercial timber areas would be managed to maintain or improve the health, vigor, and diversity of forest stands with emphasis on enhancing other resources values.	Commercial timber areas would be managed to maintain or improve the health and vigor of forest stands with emphasis on commercial timber production.	Same as Alternative A.	Same as Proposed.
	Aquifer recharge zones would be managed to maintain or enhance groundwater quality and aquifer function.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Determination of fire suppression activities would vary on a case-by-case basis, would be multiple use oriented, and not focus on only commercial timber stands.	Fires in timber stands would be suppressed immediately.	Same as Proposed.	Same as Alternative A.
	Vegetation treatments would be designed to meet watershed, wildlife, and fisheries management objectives.	Vegetation treatments would be designed to meet livestock grazing, watershed, wildlife, and fisheries management objectives.	Vegetation treatments would be designed to meet livestock objectives.	Same as Proposed.
	Recreation development would be kept to a minimum. On-site controls and facilities would be provided for the protection of resource values and the safety of the users only.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Off-road vehicle travel would be limited to designated roads and trails. Transportation planning would identify designated travel routes.	Off-road vehicle travel would be limited to existing roads and trails.	Same as Alternative A.	Same as Proposed.
	Camping would be allowed within 200' of water if no damage to watershed, water quality, and fisheries values would occur.	Same as Proposed.	Same as Proposed.	No camping would be allowed within 200' of streams and springs.
	The area would be managed consistent with the Class II and Class III visual resource management classification.	The area would be managed consistent with the Class II, Class III, and Class IV visual resource management classifications.	Same as Alternative A.	Same as Alternative A.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILD AND SCENIC RIVERS MANAGEMENT ON BLM-ADMINISTERED PUBLIC LANDS				
Sweetwater Potential Wild and Scenic River Management Area	MANAGEMENT OBJECTIVE: To manage BLM-administered public lands that meet the wild and scenic rivers suitability factors to maintain or enhance their outstandingly remarkable values and wild and scenic rivers classifications, until Congress considers them for possible designation.	No Similar Objective - No waterways or waterway segments across BLM-administered public lands would be identified for consideration for inclusion in the National Wild and Scenic Rivers System. Such areas would be managed for their inherent resource values in accordance with the appropriate provisions of the existing land use plans covering the Green River planning area.	Same as Proposed.	Same as Proposed.
	7 BLM-administered public land parcels along the Sweetwater River (involving 9.7 miles of the river), were found to be suitable for further consideration for inclusion in the Wild and Scenic Rivers System (Map 30). The interim management prescription for these lands is summarized below:	No similar action.	No similar action.	No similar action.
Wild	MANAGEMENT ACTIONS for the BLM-administered public land parcels classified as wild (involving 5.8 miles of the river): -The BLM lands would be managed to maintain their outstandingly remarkable pristine and rugged characteristics.	No similar action.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sweetwater Potential Wild and Scenic River Management Area ***Wild*** (continued)	-The BLM lands would be open to temporary cultural and paleontology activities (e.g., recordation, sampling, testing, stabilization, rehabilitation, and reconstruction) to the extent that no permanent impacts would occur to the BLM lands along the river and their immediate environment.	-No similar action.	-Same as Proposed.	Same as Proposed.
	-The BLM lands would be closed to mineral leasing and related exploration and development activities, and to mineral location, mineral material sales or extraction, and recreational mineral dredging activities (appropriate withdrawals would be pursued).	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-Geophysical exploration activities on the BLM lands would be limited to foot access (use of motorized or non-motorized vehicles would be prohibited). Surface charges may be allowed, if analyses determine that no permanent adverse impacts would result.			

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sweetwater Potential Wild and Scenic River Management Area ***Wild*** (continued)	-The BLM lands would be closed to land disposal actions. Exchanges of BLM lands "outside the corridor" could be allowed for acquiring private or state lands within the corridor or between the BLM land parcels along the river; however, no BLM lands "within the corridor" would be exchanged or sold.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be closed to surface disturbing activities such as construction of recreational developments, wildlife habitat improvements, range improvements, water impoundments or diversions, rights-of-way, mineral exploration and development, etc. Hiking trails could be built, "by hand labor", depending on demand, and conformance with other management objectives.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be an exclusion area for rights-of-way.	-No similar action.	-The BLM lands would be an avoidance area for rights-of-way.	-Same as Alternative B.
	-The BLM lands would be closed to both motorized and non-motorized vehicular travel.	-No similar action.	-Same as Proposed.	-Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sweetwater Potential Wild and Scenic River Management Area ***Wild*** (continued)	-Fires on the BLM lands would be suppressed by "light-on-the-land" techniques. No motorized or non-motorized vehicle ground equipment would be used to suppress fires.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be closed to commercial timber cutting, including firewood and post/pole cutting. Tree cutting would only be allowed for safety and environmental protection requirements and would require written permission.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-Increases in active livestock grazing preference and construction of new range improvements would be prohibited on the BLM lands.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be closed to vegetation treatment or manipulation, by other than hand or aerial seeding methods using species that will restore natural vegetation. Removal of undesirable or exotic species could be done by hand.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be managed under a Class II VRM classification.	-No similar action.	-Same as Proposed.	-Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Scenic	MANAGEMENT ACTIONS for the BLM-administered land parcels classified as scenic (involving 3.3 miles of the river):	No similar action.	Same as Proposed.	Same as Proposed.
	-The BLM lands would be managed to retain their outstandingly remarkable historic, scenic, and recreational values in a near-natural setting. Activities that are not evident or that are short-lived and would not adversely affect the character of the area would be considered on a case-by-case basis.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be open to temporary cultural and paleontology activities (e.g., recordation, sampling, testing, stabilization, rehabilitation, and reconstruction) to the extent that no permanent impacts would occur to the BLM lands along the river and their immediate environment.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be closed to mineral leasing and related exploration and development activities, and to mineral location, mineral material sales or extraction, and recreational mineral dredging activities (appropriate withdrawals would be pursued).	-No similar action.	-Same as Proposed.	-Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sweetwater Potential Wild and Scenic River Management Area *Scenic* (continued)	-Geophysical exploration would be allowed if a site specific analysis determines no adverse affects would occur. Vehicles would use designated roads and trails only. Foot access would be required off of existing roads. Surface charges may be allowed if site specific analyses determine no permanent adverse impacts would occur.			
	-The BLM lands would be closed to land disposal actions. Exchanges of BLM lands "outside the corridor" could be allowed for acquiring private or state lands within the corridor or between the BLM land parcels along the river; however, no BLM lands "within the corridor" would be exchanged or sold.	-No similar action.	-Same as Proposed.	-Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sweetwater Potential Wild and Scenic River Management Area ***Scenic*** (continued)	-The BLM lands would be closed to most surface disturbing activities such as construction of rights-of-way, mineral development, water impoundments or diversions, and to most types of recreation site development, and wildlife habitat and range improvements. Some recreation, wildlife, and range improvement development may occur on the BLM lands so long as there is not a substantial adverse effect to the natural-like appearance of all the lands within the river corridor and their immediate environment.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be an exclusion area for rights-of-way.	-No similar action.	-The BLM lands would be an avoidance area for rights-of-way.	-Same as Alternative B.
	-Motorized and non-motorized vehicles would be limited to designated roads and trails on the BLM lands.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-Fires on the BLM lands would be suppressed by "light-on-the-land" techniques. No motorized or non-motorized vehicle ground equipment off of designated roads would be used to suppress fires.	-No similar action.	-Same as Proposed.	-Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sweetwater Potential Wild and Scenic River Management Area *Scenic* (continued)	-The BLM lands would be closed to commercial timber cutting, including firewood and post/pole cutting. Tree cutting would only be allowed for safety and environmental protection requirements and would require written permission.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-Increases in active livestock grazing preference would be prohibited on the BLM lands.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be closed to vegetation treatment or manipulation, by other than hand or aerial seeding methods using species that will restore natural vegetation. Removal of undesirable or exotic species could be done by hand.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be managed under a Class II VRM classification.	-No similar action.	-Same as Proposed.	-Same as Proposed.
Recreational	MANAGEMENT ACTIONS for the BLM-administered public land parcels classified as recreational (involving 0.6 miles of the river):	No similar action.	Same as Proposed.	Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sweetwater Potential Wild and Scenic River Management Area ***Recreational*** (continued)	-The BLM lands would be managed to retain their outstandingly remarkable historic, scenic and recreational values. Intrusions that would not adversely affect the character of the area would be considered on a case-by-case basis.			
	-The BLM lands would be open to temporary cultural and paleontology activities (e.g., recordation, sampling, testing, stabilization, rehabilitation, and reconstruction) to the extent that the outstandingly remarkable values on the BLM lands are maintained and no substantial adverse affects occur to the BLM lands along the river and their immediate environment.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be closed to mineral leasing and related exploration and development activities, and to mineral location, mineral material sales or extraction and recreational mineral dredging activities (appropriate withdrawals would be pursued).	-No similar action.	-Same as Proposed.	-Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sweetwater Potential Wild and Scenic River Management Area ***Recreational*** (continued)	-Geophysical exploration would be allowed if a site specific analysis determines no adverse affects would occur. Vehicles would use designated roads and trails only. Foot access would be required off of existing roads. Surface charges may be allowed if site specific analyses determine no permanent adverse impacts would occur.			
	-The BLM lands would be closed to land disposal actions. Exchanges of BLM lands "outside the corridor" could be allowed for acquiring private or state lands within the corridor or between the BLM land parcels along the river; however, no BLM lands "within the corridor" would be exchanged or sold.	-No similar action.	-Same as Proposed.	-Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sweetwater Potential Wild and Scenic River Management Area ***Recreational*** (continued)	-The BLM lands would be closed to surface disturbing activities such as construction of rights-of-way and mineral development, and water impoundments or diversions. The BLM lands would be open to some surface disturbing activities such as construction of recreational developments, and wildlife habitat, and range improvements, provided such activity is done in a manner that minimizes surface disturbance, sedimentation, pollution, and visual intrusion.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be an exclusion area for rights-of-way.	-No similar action.	-The BLM lands would be an avoidance area for rights-of-way.	-Same as Alternative B.
	-Motorized and non-motorized vehicles would be limited to designated roads and trails on the BLM lands.	-No similar action.	-Same as Proposed.	-Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sweetwater Potential Wild and Scenic River Management Area ***Recreational*** (continued)	-Fires on the BLM lands would be suppressed using appropriate techniques, provided no substantial adverse effects would occur to the BLM lands directly involved, the river and their immediate environment. Motorized and non-motorized vehicle ground equipment on designated roads and trails, the use of chainsaws, and helicopter bucket drops may be used to suppress fires.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be closed to commercial timber cutting. Firewood collection for camp fires and some post and pole cutting would be allowed, provided no substantial adverse effects would occur to the BLM lands along the river and their immediate environment.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-Increases in active livestock grazing preference would be prohibited on the BLM lands.	-No similar action.	-Same as Proposed.	-Same as Proposed.

TABLE 2-1 (continued)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sweetwater Potential Wild and Scenic River Management Area ***Recreational*** (continued)	-The BLM lands would be closed to vegetation treatment or manipulation, by other than hand or aerial seeding methods using species that will restore natural vegetation. Removal of undesirable or exotic species could be done by hand.	-No similar action.	-Same as Proposed.	-Same as Proposed.
	-The BLM lands would be managed under a Class II VRM classification.	-No similar action.	-Same as Proposed.	-Same as Proposed.

TABLE 2-2

SUMMARY COMPARISON OF IMPACTS

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
AIR QUALITY (Within the Planning Area Only)	Adverse impacts to users could occur because of restricted location for placement of facilities to meet air quality standards.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Surface mining, construction activity, road use, facility emissions, prescribed fire, and wildfire would adversely affect air quality, compared to Alternative A. Acreage treated under prescribed burns would increase short-term impacts from generated smoke.	Surface mining, construction activity, road use, facility emissions, prescribed fire, and wildfire would adversely affect air quality slightly more than the Proposed Plan. The acreage treated under prescribed burns would result in fewer short-term impacts from generated smoke than under the Proposed Plan.	Surface mining, construction activity, road use, facility emissions, prescribed fire, and wildfire would adversely affect air quality more than under Proposed or Alternative A; however, air quality standards would still be met.	Surface mining, construction activity, road use, facility emissions, prescribed fire, and wildfire would adversely affect air quality less than under Proposed. Additional acres treated under prescribed burns would increase short-term impacts from generated smoke over Alternative A.
AIR QUALITY (Considering the Expanded Impact Analysis Area)	The surface disturbances and activities that could occur in the expanded area could contribute to increased dust and emission levels, requiring additional mitigation, over a broader area, to ensure air quality standards are met.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Management prescriptions for the Wind River Front (in the planning area) would also protect the Class I airshed in the Wind River Mountains (in the expanded analysis area) from the combined effects of actions directly adjacent to the Class I area. Vehicle use and campfires could potentially impact the Class I airshed. However, this impact is not anticipated to be significant as management prescriptions would mitigate much of it.	The Class I airshed in the Wind River Mountains could be affected from the combined effects of actions both inside and outside the planning area. However, required site specific review and impact analyses of proposed actions would identify requirements that would be employed to mitigate the concerns.	Same as Alternative A.	The impacts would be somewhat less than for Alternative A and less mitigation would be necessary as developments would be reduced.

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
CULTURAL AND PALEONTOLOGICAL RESOURCES (Within the Planning Area Only)	Cultural resources would benefit from mitigation requirements and management direction for surface disturbing activities, particularly on the 79,120 acres with a no surface occupancy (NSO) requirement and the 1,189,340 acres of controlled surface use requirement.	Cultural resources would benefit from mitigation requirements and management direction for surface disturbing activities, particularly on the 110,480 acres with a no surface occupancy (NSO) requirement and the 944,210 acres of controlled surface use requirement.	Cultural resources would benefit from mitigation requirements and management direction for surface disturbing activities, particularly on the 9,675 acres with a no surface occupancy (NSO) requirement and the 1,050,420 acres of controlled surface use requirement.	Cultural resources would benefit from mitigation requirements and management direction for surface disturbing activities, particularly on the 605,600 acres with a no surface occupancy (NSO) requirement and the 1,104,200 acres of controlled surface use requirement.
	Potential impacts to approximately 120 cultural resource sites would result from surface disturbing activities.	Potential impacts to approximately 150 cultural resource sites would result from surface disturbing activities.	Potential impacts to approximately 300 cultural resource site would result from increased surface disturbing activities.	Potential impacts to approximately 100 cultural resource sites would result from increased surface disturbing activities.
	Targeted management efforts within activity or implementation plans would benefit and enhance cultural resources on 15 trails and 18 sites.	Targeted management efforts within activity or implementation plans would benefit and enhance cultural resources on 15 trails and 12 sites.	Targeted management efforts within activity or implementation plans would benefit and enhance cultural resources on 15 trails and 9 sites.	Same as Proposed.
	Management of the Steamboat-Sand Dunes area and the Boars Tusk area for geological and ecological features would be beneficial for cultural and historical concerns.	Failure to manage the Steamboat-Sand Dunes area and the Boars Tusk area for geological and ecological features would result in a loss of cultural and historical values.	Same as Alternative A.	Same as Proposed.
	Acquisition of Fort LaClede would be beneficial to the BLM's cultural resource management efforts.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
CULTURAL RESOURCES (Within the Planning Area Only) (continued)	Full development of oil and gas fields in areas where there are portions of significant historic trail segments would result in reduced integrity of the setting of those trails even if the development complies with the existing trails management plan. Well facilities, pipelines, and access roads all intrude on the visual setting of the historic trails and it is difficult to fully develop an oil and gas field without having facilities within sight of the trails.	Same as Proposed.	Same as Proposed.	Same as Proposed.
CULTURAL RESOURCES (Considering the Expanded Impact Analysis Area)	As with Alternative A, more cultural information would be discovered through inventory of sites in the expanded area; however, fragmentation of historic trails would increase, as would the importance and sensitivity of unfragmented historic landscapes. Cumulatively, intrusions could significantly diminish the historic trail resource. Impacts upon the visual integrity of historic trails within the expanded impact analysis area increase the significance of other areas where trail resources retain excellent visual integrity such as the South Pass Historic Landscape. The effects to the South Pass Historic Landscape should be less than under Alternative A due to the implementation of management prescriptions applied to the area.	More cultural information would be discovered through inventory of sites in the expanded area; however, fragmentation of historic trails would increase as would the importance and sensitivity of historic landscapes. Cumulatively, intrusions could significantly diminish the historic trail resource. Impacts upon the visual integrity of historic trails within the expanded impact analysis area increase the significance of other areas where trail resources retain excellent visual integrity such as the South Pass Historic Landscape.	Alternative B would create a larger effect than Alternative A, on cultural values, particularly the unfragmented historic landscapes.	Less cultural information would be discovered as fewer site inventories would occur in the expanded area, and fragmentation of historic trails would stay the same as it is currently or slightly increase, as would the importance and sensitivity of historic landscapes. Cumulatively, intrusions could still diminish the historic trail resource but not to the extent of the other alternatives.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
PALEONTOLOGICAL RESOURCES (Within the Planning Area Only)	New resources would be discovered providing beneficial effects by providing new information. Some resources may be destroyed resulting in a loss of scientific information. However, it is anticipated that more resources would be discovered than destroyed, so impacts overall would not be significant.	Same as Proposed.	Same as Proposed.	Same as Proposed.
PALEONTOLOGICAL RESOURCES (Considering the Expanded Impact Analysis Area)	No additional effects would occur either to or from the expanded analysis area relative to paleontological resources.	Same as Proposed.	Same as Proposed.	Same as Proposed.
FIRE (Within the Planning Area Only)	Impacts would occur from costs for wildfire suppression and prescribed fire, accrued from restrictions imposed by other resource management requirements.	Impacts would occur from costs for wildfire suppression and prescribed fire, accrued from restrictions imposed by other resource management requirements, but would be less than the Proposed Plan.	Benefits would occur from reduced costs for wildfire suppression and prescribed fire activity, due to fewer imposed restrictions than under Proposed.	Impacts would occur from additional costs, over Proposed, for wildfire suppression and prescribed fire, accrued from restrictions imposed by other resource management requirements.
	Increased activity would increase the probability that wildfire would occur.	Same as Proposed.	Same as Proposed.	Same as Proposed.
FIRE (Considering the Expanded Impact Analysis Area)	No additional effects would occur either to or from the expanded analysis area relative to fire.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
FORESTS AND WOODLANDS (Within the Planning Area Only)	All commercial forested lands would be managed under either a restricted management category or a category to enhance other resource values. This would result in a 50% reduction in allowable timber cut. Roughly 60% (4,670 acres) would be subject to operational and/or seasonal restrictions. The level of effect would vary with the actual timber volume output. The limitations on forest management would decrease the amount of raw material available to wood producers, decrease economic return to the government, and result in an increase in forest insect and disease activity.	All commercial forest lands would be managed under a restricted management category which would result in a 1 to 50% reduction in volume output. Roughly 50% (4,367 acres) would be subject to operational and/or seasonal restrictions. The level of effect would vary with the actual volume output. Impacts associated with a 1% output reduction would be negligible. Impacts with a 50% reduction would be similar to the Proposed Plan.	All commercial forested lands would be placed in a restricted management category. Volume output would be reduced by roughly 1%. There would be no operational/seasonal restrictions except a livewater buffer. Impacts to forest management would be minimal.	All forested lands would be placed in a category designed to enhance or maintain other resource values. There would be no specific annual timber sale output. Timber harvesting would only be allowed when it would specifically and emphatically benefit other resource values. Wood producers could not rely on forested lands in planning area as a source of material. Forest stand conditions would decline. Forest insect and disease level would increase. Economic return to the government would be negligible.
FORESTS AND WOODLANDS (Considering the Expanded Impact Analysis Area)	Since some of the forest lands in the expanded analysis area are within high potential areas for mineral development, it is likely that the forests in those areas would be affected by development activities removing the trees. This could have an important affect in some localized areas and affect the viability of some future timber sales. Recreational and developmental demands in commercial and non-commercial forest areas could create additional roads, undesirable campsites, risk of forest fire and deterioration of forest health through soil compaction and damage to trees.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
HAZARDOUS MATERIALS (Within the Planning Area Only)	Immediate attention to releases of hazardous wastes would protect the environment and the public.	Same as Proposed.	Same as Proposed.	Same as Proposed.
HAZARDOUS MATERIALS (Considering the Expanded Impact Analysis Area)	No additional effects would occur either to or from the expanded analysis area relative to hazardous materials.	Same as Proposed.	Same as Proposed.	Same as Proposed.
LANDS (Within the Planning Area Only)	Mineral withdrawals and stock driveways would be revoked and other lands withdrawn for resource protection (267,030 acres). The newly withdrawn lands would be unavailable for mineral entry, causing a long-term loss of productivity of locatable mineral resources.	Those lands which remain withdrawn continue to be unavailable for mineral entry, causing a long-term loss of productivity of locatable mineral resources on about 3 million acres. An additional 34,859 acres would also be withdrawn.	Mineral withdrawals would be revoked and other lands withdrawn for resource protection, (34,699 additional acres). Withdrawn lands would be unavailable for mineral entry, causing a long-term loss of productivity of locatable mineral resources.	Mineral withdrawals would be revoked and other lands withdrawn for resource protection (258,234 additional acres). The newly withdrawn lands would be unavailable for mineral entry, causing a long-term loss of productivity of locatable mineral resources.
	The sale, exchange, or issuance of R&PP patents during the next 20 years would benefit the public as well as Bureau programs.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The addition of 3 new rights-of-way windows would concentrate activities and reduce disturbance.	Existing rights-of-way windows concentrate activities and reduce disturbance less than under the Proposed Plan.	Same as Proposed.	Same as Proposed.
	Approximately 25% of rights-of-way applications would be affected by avoidance and exclusion areas for surface disturbing activities.	Approximately 45% of rights-of-way applications would be affected by avoidance and exclusion areas for surface disturbing activities.	Approximately 5% of rights-of-way applications would be affected by avoidance and exclusion areas for surface disturbing activities.	Approximately 50% of rights-of-way applications would be affected by avoidance and exclusion areas for surface disturbing activities.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LANDS (Within the Planning Area Only) (continued)	The majority of right-of-way exclusion areas are 10- to 20-acre petroglyph and historical sites and there would be no impact on rights-of-way. The exclusion of a 1/2-mile wide corridor along the Big Sandy River (for a length of 1 mile), the Sweetwater River wild and scenic river corridor, and the Currant Creek drainage would have minimum impact unless production activity increases in these areas.	The majority of right-of-way exclusion areas are small sites such as the 10- to 20-acre petroglyph and historic sites. There would be no impact on rights-of-way.	The majority of right-of-way exclusion areas are 10- to 20-acre petroglyph and historic sites and there would be no impact on rights-of-way. The exclusion of a 1/2-mile wide corridor along the Big Sandy River (for a length of 1 mile) and the Sweetwater River wild and scenic river corridor would have minimum impact unless production activity increases in these areas.	Same as Proposed.
	Exclusion of rights-of-way in portions of the South Pass Historic Landscape (vista) and the Greater Red Creek (55,880-acre Red Creek portion) would have a major affect on the location of rights-of-way and would require major reroutes.	Rights-of-way would not be excluded in the South Pass Historic Landscape so no impacts to rights-of-way routing would occur.	Same as Alternative A.	A larger area surrounding South Pass would be excluded from right-of-way routing, creating greater effects on the location of rights-of-way.
	Management resulting in avoidance of placing rights-of-way in the Greater Sand Dunes ACEC, portions of South Pass Historic Landscape, the Steamboat Mountain and Greater Red Creek areas, and the eastern portion of the Wind River Front may require major reroutes and extensive planning to limit impacts.	Management resulting in avoidance of placing rights-of-way in the Greater Sand Dunes and the Red Creek ACEC may require major reroutes and extensive planning to limit impacts.	Management resulting in avoidance of placing rights-of-way in the Greater Sand Dunes may require major reroutes and extensive planning to limit impacts.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LANDS (Within the Planning Area Only) (continued)	Closure of the Red Creek utility line concentration area would prohibit additional pipelines along this corridor, which serves Clay Basin and oil fields to the south. This could adversely affect right-of-way users by increasing route length and construction costs.	Continuing to keep open the Red Creek utility line concentration area would allow additional pipelines which would benefit right-of-way users.	Same as Proposed.	Same as Proposed.
LANDS (Considering the Expanded Impact Analysis Area)	No additional effects would occur either to or from the expanded analysis area relative to lands.	Same as Proposed.	Same as Proposed.	Same as Proposed.
LIVESTOCK GRAZING (Within the Planning Area Only)	Existing and projected loss of forage due to mineral development, lands actions, and other disturbance would be approximately 4,568 AUMs (see Table 2-31).	Existing and projected loss of forage due to mineral development, lands actions, and other disturbance would be approximately 4,109 AUMs (see Table 2-32).	Existing and projected loss of forage due to mineral development, lands actions, and other disturbance would be approximately 5,052 AUMs (see Table 2-33).	Existing and projected loss of forage due to mineral development, lands actions and other disturbance would be approximately 4,003 AUMs (see Table 2-34).
	Benefits would accrue from completion and implementation of 42 AMPs on about 60% of the resource area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Prescribed burning on 67,700 acres, and wildfire, would have a short-term impact on forage but should result in long-term increased productivity of forage.	Prescribed burning on 26,700 acres, and wildfire, would have a short-term impact on forage but should result in long-term increased productivity of forage.	Prescribed burning on 290,000 acres, and wildfire, would have a short-term impact on forage but should result in long-term increased productivity of forage.	Prescribed burning on 41,000 acres, and wildfire, would have a short-term impact on forge but should result in long-term increased productivity of forage.
	Management actions implemented to achieve proper functioning condition could impact grazing through establishment of utilization limits or reduction of permitted active preference.	No similar action.	No similar action.	No similar action.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LIVESTOCK GRAZING (Within the Planning Area Only) (continued)	Closure of areas to surface disturbing activities (no surface occupancy) would adversely affect project placement and development aimed at improving livestock distribution.	Same as Proposed.	A reduction in closed areas (no surface occupancy) would allow project placement and development aimed at improving livestock distribution in more areas. This would have a beneficial effect on livestock distribution.	Same as Proposed.
	Surface disturbance on 9 allotments (384,000 acres in the allotments) could disrupt lambing.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Land disposal, affecting approximately 1,087 AUMs, would be considered an irreversible irretrievable loss of forage.	Lands disposal, affecting approximately 760 AUMs, would be considered an irreversible, irretrievable loss of forage.	Same as Proposed.	Same as Proposed.
	No similar impact.	Same as Proposed.	Same as Proposed.	Closure of live water streams to grazing would severely impact both AUM and water availability.
LIVESTOCK GRAZING (Considering the Expanded Impact Analysis Area)	Approximately 18,000 acres would be disturbed by the year 2000 in the cumulative area of influence. This surface disturbance could cause displacement of wildlife into the surrounding herd areas. This could affect the ability of these areas to support existing wildlife populations and livestock numbers.	Same as Proposed.	Approximately 33,800 acres would be disturbed by the year 2000 in the expanded area of influence. This surface disturbance could cause displacement of wildlife into the surrounding herd areas. This could affect the ability of these areas to support existing wildlife populations and livestock numbers.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LIVESTOCK GRAZING (Considering the Expanded Impact Analysis Area) (continued)	A combination of activities inside and surrounding the Green River Resource Area could result in future displacement of wildlife and lessening of use periods for livestock. If livestock numbers remain the same for the Resource Area, the impact from displaced wildlife should be minimal. The guidelines for vegetative management in riparian and upland areas should mitigate any impact to the vegetative resources. However, in concentrated area of surface disturbance livestock grazing could be impacted by limiting the length of time grazing is allowed on public lands or by decreasing livestock AUMs.	Same as Proposed.	A combination of activities inside and surrounding the Green River Resource Area would result in future displacement of wildlife and lessening of use periods for wildlife. If livestock numbers increase for the planning area, the impact from displaced wildlife could be severe. The guidelines for vegetative management in riparian and upland areas should mitigate any impact to the vegetative resources. However, increased livestock numbers with displaced wildlife would result in an impact to livestock by severely limiting the length of time grazing is allowed on public lands.	Same as Proposed.
MINERALS (Within the Planning Area Only) ***Oil and Gas***	The closing of 383,370 acres to leasing; applying no surface occupancy stipulations to 79,120 acres; applying controlled surface use restrictions on 1,189,340 acres; and applying seasonal restrictions on 1,954,560 acres would increase the costs of doing business and possibly preclude some activities.	The closing of 255,750 acres to leasing; applying no surface occupancy stipulations to 110,480 acres; applying controlled surface use restrictions on 944,210 acres; and applying seasonal restrictions on 2,321,930 acres would increase the costs of doing business and possibly preclude some activities.	The closing of 232,770 acres to leasing; applying no surface occupancy stipulations to 9,675 acres; applying controlled surface use restrictions on 1,050,420 acres; and applying seasonal restrictions on 361,330 acres would increase the costs of doing business and possibly preclude some activities. However, this impact would be greatly reduced from Alternative A.	The closing of 399,410 acres to leasing; applying no surface occupancy stipulations to 605,600 acres; applying controlled surface use restrictions on 1,104,200 acres; and applying seasonal restrictions on 2,330,830 acres would increase the costs of doing business and possibly preclude some activities. This impact would be greater than Alternative A.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Oil and Gas (continued)	Approximately 3.62 trillion cubic feet of gas and 128 million barrels of oil could be produced during the 1991 through 2010 time period. This production would provide an economic and energy benefit but would be an irreversible, irretrievable loss of the mineral resource.	Approximately 3.64 trillion cubic feet of gas and 129 million barrels of oil would be produced during the 1991 through 2010 time period. This production would provide an economic and energy benefit but would be an irreversible, irretrievable loss of the mineral resource.	Approximately 4.7 trillion cubic feet of gas and 168 million barrels of oil would be produced during the 1991 through 2010 time period. This production would provide an economic and energy benefit but would be an irreversible, irretrievable loss of the mineral resource.	Approximately 3.61 trillion cubic feet of gas and 127 million barrels of oil would be produced during the 1991 through 2010 time period. This production would provide an economic and energy benefit but would be an irreversible, irretrievable loss of the mineral resource.
	About 28 fewer wells would be drilled than under Alternative A, reducing production by 101,574 barrels of oil and 2,872,908 million cubic feet of gas.	About 1,328 wells would be drilled, resulting in production of 5,609,142 barrels of oil and 158,098,364 million cubic feet of gas.	About 1,157 more wells would be drilled than under Alternative A, increasing production by 4,108,104 barrels of oil and 116,193,168 million cubic feet of gas.	About 32 fewer wells would be drilled than under Alternative A, reducing production by 118,503 barrels of oil and 3,351,726 billion cubic feet of gas.
Coal	Short-term and long-term effects would occur to coal leasing and development due to approximately 12,600 acres determined unsuitable for leasing, approximately 10,410 acres unacceptable for further leasing consideration, approximately 52,620 acres unacceptable for surface mining, approximately 11,860 acres with limitations on surface facilities and over 135,800 acres subject to further mitigation and/or consultation. Increased costs of mitigation would have short-term and long-term effects on coal production activities by increasing costs and limiting timing of development.	Short-term and long-term effects would occur to coal leasing and development due to approximately 14,400 acres determined unsuitable for leasing, approximately 4,408 acres unacceptable for surface and subsurface mining, approximately 5,800 acres unacceptable for subsurface mining, and approximately 7,168 acres with limitations on surface facilities. Increased costs of mitigation would have short- and long-term effects on coal production activities by increasing costs and limiting timing of development.	Short-term and long-term effects would occur to coal leasing and development due to approximately 12,600 acres determined unsuitable for leasing, approximately 19,160 acres unacceptable for surface mining operations but available for subsurface mining, approximately 1,280 acres with limitations on surface facilities, and approximately 135,800 acres are subject to further mitigation and/or consultation. Increased costs of mitigation would have short- and long-term effects on coal production activities by increasing costs and limiting timing of development but this impact would be reduced from Alternative A and the Proposed Plan.	Short-term and long-term effects would occur to coal leasing and development due to approximately 12,600 acres determined unsuitable for leasing, and approximately 416,000 acres unacceptable for further leasing consideration. Increased costs of mitigation would have short- and long-term effects on coal production activities by increasing costs and limiting development. This impact would be greater than Alternative A or the Proposed Plan.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Coal (continued)	Approximately 325 million tons of Federal coal would be produced which would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit.	Same as Proposed.	Approximately 340 million tons of Federal coal would be produced which would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit.	Approximately 297 million tons of Federal coal would be produced which would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit.
	More opportunities for coal development would occur over Alternative A, as more area has been determined suitable for further leasing consideration. Proposed additional inventory and analysis should alleviate unacceptable impacts identified in Alternative B, while providing opportunities for development and economic benefit that were denied in Alternative C.	Opportunities for coal development could occur but would be limited due to about 18,900 acres that would be unsuitable and unacceptable for coal development activities and the smaller area considered suitable for further leasing consideration.	The greatest opportunity for coal development would occur in this alternative. However, unacceptable impacts would occur to wildlife, cultural, geologic, and recreation resources.	This alternative would adversely affect coal development opportunities and production would decline in the long term. The extent of lost development opportunity was considered to be an unacceptable impact and another alternative was developed to provide consideration for further leasing while providing necessary protection to other resource values.
Sodium	Long-term benefits would occur from leasing. However, short-term and long-term effects would occur through increased costs of mitigation.	Same as Proposed.	Long-term benefits would occur from leasing. However, short- and long-term effects would occur through increased costs of mitigation. These would be less than the Proposed Alternative.	Same as Proposed.
	Approximately 115 million tons of trona would be produced from within the resource area which would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit.	Approximately 100 million tons of trona would be produced from within the resource area which would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Mineral Materials	Increased costs of mitigation (about 245,340 acres closed to salable minerals) would increase costs of doing business over Alternative A, in both the short and long term. Some unauthorized use would continue. Materials sold would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit.	Costs of mitigation (about 53,450 acres closed to salable minerals) would increase costs of doing business in both the short and long term. Some unauthorized use would continue. Materials sold would be an irreversible irretrievable loss the mineral resource but would provide an economic benefit.	Costs of mitigation (about 36,470 acres closed to salable minerals) would decrease from Alternative A resulting in reduced costs of doing business in both the short and long term. Some unauthorized use would continue. Materials sold would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit.	Increased costs of mitigation (about 338,400 acres closed to salable minerals) would increase costs of doing business over Alternative A in both the short and long term. Some unauthorized use would continue. Materials sold would be an irreversible irretrievable loss the mineral resource but would provide an economic benefit.
Locatable Minerals	Approximately 3 million acres of withdrawals would be revoked thus opening the lands to mineral location. Approximately 261,764 acres would be subject to new withdrawals and 5,266 acres of existing withdrawals would be retained. These withdrawals close the lands to mineral location; however, effects would be much reduced from Alternative A.	Existing withdrawals on approximately 3 million acres would remain in effect and 34,859 acres of new withdrawals close the lands to mineral location. This would cause an adverse effect to the exploration and development of mineral resources.	Approximately 3 million acres of withdrawals would be revoked thus opening the lands to mineral location. Approximately 34,699 acres would be subject to new withdrawals and about 4,746 acres of existing withdrawals would be retained. These withdrawals close the lands to mineral location. Adverse effects would be less than either Alternative A or the Proposed Plan.	Approximately 3 million acres of withdrawals would be revoked thus opening the lands to mineral location. Approximately 258,234 acres would be subject to new withdrawals. These withdrawals close the lands to mineral location. Adverse effects would be much reduced from Alternative A, but not as much as with the Proposed Plan.
	Additional requirements and mitigation for Special Management Areas would increase costs of doing business for both short- and long-term periods.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Geophysical	Areas closed to geophysical activity result in a loss of data, which would be considered an unavoidable adverse impact. Increased costs for mitigation would affect operations.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Geophysical (continued)	Areas open to off-road vehicle use and exploration activity provide beneficial effects because retrieval of information is allowed.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 181,570 acres would be closed to off-road vehicle travel and about 1,006,335 acres limited to designated roads and trails which affects the use of off-road vehicles in retrieval of information and can increase costs of operations.	About 19,220 acres would be closed to off-road vehicle travel and about 426,954 acres limited to designated roads and trails which affects the use of off-road vehicles in retrieval of information and can minimally increase costs of operations. Effects would be substantially less than the Proposed Plan.	About 13,450 acres would be closed to off-road vehicle travel. Effects would be less than either Alternative A or the Proposed Plan, as fewer acres would be closed to off-road vehicle use and restricted to designated roads and trails (1,320 acres). An additional closure of 5,000 acres to recreational ORV use would not impact the geophysical program.	About 217,430 acres would be closed to off-road vehicle travel. Effects would be greater than Alternative A or the Proposed Plan, as more areas would be closed to off-road vehicle use in addition to those restricted to designated roads and trails (425,090 acres).

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
MINERALS (Considering the Expanded Impact Analysis Area):				
Oil and Gas	As with Alternative A, the cumulative impact on the oil and gas resource would be a greater or lesser depletion/use of that resource within the time frame of the plan, and the total preservation of some potential resources. Economic and market factors are the major controlling influences that determine the actual rate and extent of oil and gas exploration and development. Land use restrictions result in higher costs, and therefore influence to an unknown and variable degree the rate of resource exploration and development. No lease areas remove potential resources from exploration and development consideration, as can some NSO stipulations if they block the perceived only feasible access route to a reservoir. This would eliminate from depletion/use potential resources which might lay beneath these restrictions. Somewhat lesser amounts of resource depletion will be found in this alternative than Alternative A, but more than Alternative C.	The impact on the oil and gas resource would be a greater or lesser depletion/use of that resource within the time frame of the plan, and the total preservation of some potential resources. Economic and market factors are the major controlling influences that determine the actual rate and extent of oil and gas exploration and development. Land use restrictions result in higher costs, and therefore influence to an unknown and variable degree the rate of resource exploration and development. No lease areas remove potential resources from exploration and development consideration, as can some NSO stipulations if they block the perceived only feasible access route to a reservoir. This would eliminate from depletion/use potential resources which might lay beneath these restrictions. Depletion/use of the oil and gas resource would occur over much of the area due to accessibility and limited restrictions.	The impact on the oil and gas resource would be similar to Alternative A. However, depletion/use of the oil and gas resource would be greatest with this alternative.	The impact on the oil and gas resource would be greater than Alternative A. Depletion/use of the oil and gas resource would be least with this alternative due to the additional areas closed or restricted to resource uses.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sodium/Trona	Impacts to trona in the expanded area would be about the same as in the planning area. Approximately 16 million tons of trona would be produced per year from within the Known Sodium Leasing Area which would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit, as described in the socioeconomic impact discussion. Production from the new Wold mine could increase production in the area to 17.25 million tons per year.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Locatable Minerals	The overall reductions in the total acreage withdrawn could lead to the development/use of previously undiscovered mineral resources. Even if resource use does not occur, exploration for locatable mineral resources would occur almost immediately upon revocation of the Oil Shale Withdrawal, because of changes in geological knowledge and technology that have taken place since the withdrawal was initiated. The potential for this to happen is greater than Alternative A. Costs of mitigation would also affect locatable mineral development. Requirements and mitigation for special management areas would increase costs of doing business for both the short and the long term.	Current exploration for locatable minerals would remain effectively curtailed within the Oil Shale Withdrawal, and other small areas withdrawn from the Mining Law. Cumulatively, this would effectively reduce the capability to explore and develop locatable mineral resources for much of the area. Resource knowledge would not be acquired in areas removed from consideration for exploration and development.	The overall reductions in the total acreage withdrawn in this alternative could lead to the development/use of previously undiscovered mineral resources within the time frame of the plan. Even if resource use does not occur, exploration for locatable mineral resources would occur almost immediately upon revocation of the Oil Shale Withdrawal because of changes in geological knowledge and technology that have taken place since the withdrawal was initiated. The potential for this to happen would be greatest in this alternative (the fewest new acres withdrawn).	As with Alternative B, the overall reductions in total withdrawn area could lead to the development/use of previously undiscovered mineral resources within the time frame of the plan. Even if resource use does not occur, exploration for locatable mineral resources would occur almost immediately upon revocation of the Oil Shale Withdrawal because of changes in geological knowledge and technology that have taken place since the withdrawal was initiated. However, because of the large amount of new acres to be withdrawn, the potential for this to happen is the least for this alternative, next to Alternative A which retains the most acres withdrawn.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Mineral Materials	Additional sources of materials would be available over the expanded area. Costs of mitigation would increase costs of doing business in both the short and long term. Some unauthorized use would continue. Materials sold would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit, as described in the socioeconomic impact discussion.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Geophysical	Areas closed to geophysical activity result in a loss of data through the long term, and would be considered an unavoidable adverse impact. Costs for mitigation would affect operations in both the short and long term. Areas open to vehicle use and exploration activity provide beneficial long-term effects because retrieval of information is allowed. Since most of the expanded area is accessible, the loss of data would be minimal, in localized areas, and would not be significant.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
OFF-ROAD VEHICLES (Within the Planning Area Only)	Beneficial impacts to the off-road vehicle user would result from the large amount of area accessible, on existing roads and trails, for off-road vehicle use, and 10,500 open acres in the Greater Sand Dunes ACEC.	The off-road vehicle user enjoys virtually no restrictions on off-road vehicle use. Long-term beneficial impacts would result from 99% of the planning area being available to off-road vehicle use.	Long-term beneficial impacts would be provided to the off-road vehicle user from the large amount of area accessible, on existing roads and trails, and the new access created by development activity. However, reduced ORV open acreage (5,500 acres) in the Greater Sand Dunes ACEC and increased oil and gas development in that same area would limit ORV recreational opportunities for that area.	Same as Proposed.
	ORV opportunities would be denied on 181,930 acres which would adversely impact ORV use in those areas.	ORV opportunities would be denied on only 10,220 acres, which would benefit ORV use.	ORV opportunities would be denied on 185,610 acres which would adversely impact ORV use.	ORV opportunities would be denied on 217,430 acres which would adversely impact ORV use in those areas.
OFF-ROAD VEHICLES (Considering the Expanded Impact Analysis Area)	Long-term beneficial affects would result from the large number of existing roads and trails available for vehicle use, and from newly constructed roads anticipated with additional development which would provide access to new areas. The areas closed or limited to designated roads and trails are small in comparison.	Long-term beneficial effects would result from the large amount of area available to off-road vehicle use. The off-road vehicle user enjoys virtually no restrictions on vehicle use under Alternative A.	Long-term beneficial effects would be similar to the Proposed Plan. There would be additional ORV opportunities over Alternative A in areas with the increased access development.	Same as Proposed.
RECREATION (Within the Planning Area Only)	Long-term beneficial impacts would occur to recreation users as recreation use increases and additional facilities become available.	Adverse impacts would occur to recreation users as recreational use increases but additional facilities would not become available.	Short-term benefits would occur for recreation users due to increased development of recreation sites. However, this would be offset in the long term due to mineral development activities increasing and displacing users, and concentrating recreation use in other areas.	Long-term beneficial impacts would occur to recreation users as dispersed recreation use increases and existing facilities are improved.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
RECREATION (Within the Planning Area Only) (continued)	Disruption of recreation opportunities in areas of development would occur. This would be important to local users but probably not nationally significant.	Same as Proposed.	Same as Proposed.	Same as Proposed.
RECREATION ***Wind River Front Special Recreation Management Area***	Not allowing oil and gas leasing and development on the eastern portion of the Wind River Front Special Recreation Management Area (88,510 acres) would benefit recreation users by maintaining the setting of the area and the visitors' experience opportunities.	Allowing oil and gas leasing and development in the eastern portion of the Wind River Front Special Recreation Management Area would adversely impact the visitors' experience level and vastly change the rustic setting of the area.	Same as Alternative A.	Same as Alternative A.
	By restricting development activities, the recreation opportunities and the scenic quality of the area would be retained. Wildlife and riparian resources would also be protected.	Development activities could adversely impact the recreation opportunities and the scenic qualities of the area. Wildlife habitat could also be impacted from uncontrolled development.	Recreation and development activities could adversely impact the scenic qualities and wildlife resources found in the area.	The wildlife and riparian resources, scenic values, and dispersed recreation opportunities would benefit from strict management controls on developmental activities.
RECREATION (Considering the Expanded Impact Analysis Area)	In addition to the impacts identified within the planning area, recreation demand and uses could increase to a point where conflicts would occur for unconfined dispersed recreation opportunities. However, management prescriptions would mitigate these impacts somewhat, to lessen the effects identified in Alternative A.	It is anticipated that as developments occur, populations increase, and other traditional recreation use areas become saturated, more demands would continue to be placed on recreation sites and facilities in the planning area. Although recreation users would benefit from access to non-traditional use areas, the integrity of setting and the opportunity for unconfined and solitary recreation experiences would diminish.	More impacts would occur to recreation users than for Alternative A. The settings available for dispersed recreation opportunities would be further diminished over a larger area by increased development activity, vehicular travel and access into previously undeveloped areas. This would create lost opportunities for unconfined recreation experiences for some recreation users.	Impacts would be lessened from Alternative A as more areas would remain unmodified, providing areas for dispersed recreation opportunities.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
RECREATION (Considering the Expanded Impact Analysis Area) (continued)	Same as Alternative A.	Wyoming's National Parks and Forests are reaching their maximum visitor carrying capacity (Recreation 2000). The Wyoming Travel Commission will be looking for BLM-administered lands on which to promote recreational activities. Adverse impacts to both developed and dispersed recreation sites could be anticipated with the increased use and visitor demands. Traditional users may be displaced from the increased use. With increased use and pressure on the recreation sites, some of the visitors experience may be adversely impacted.	Same as Alternative A.	Same as Alternative A.
	Effects to the visitor experience in the Wind River Front would be reduced from Alternative A. The eastern portion of the area would be closed to development activity, retaining its predominately unmodified natural environment.	Developing oil and gas fields and somewhat locatable mineral activity would affect the recreation uses and experiences in the Wind River Front area. The Wind River Front has some of the highest recreational valued lands within the planning area. The visitors experiences and settings would be adversely impacted from pipelines, access roads, and other facilities associated with mineral development. The area would be in jeopardy of losing its predominately unmodified natural environment and the users of losing the opportunity for isolation from the sights and sounds of humans.	Same as Alternative A.	Adverse effects to the visitor experience in the Wind River Front would be reduced from alternative A but not as much as under the Proposed Plan. Parts of the eastern portion of the Wind River Front would be closed to development, retaining the predominately unmodified natural environment in those areas.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
RECREATION (Considering the Expanded Impact Analysis Area) (continued)	Same as Alternative A.	Some hunting opportunities may diminish for the general public in areas where development occurs due to the displacement of animals and because of measures applied to protect public health and safety. The ability of some pristine habitat areas to support wildlife may also be diminished due to increased recreation uses and access into these areas.	Same as Alternative A.	Same as Alternative A.
SOCIOECONOMICS (Within the Planning Area Only) ("Cumulative economic output" includes direct, indirect, and induced economic values)	Mineral development and exploration (trona, oil and gas, and coal), recreation related businesses (travel and tourism), and agricultural livestock would remain the area's major economic activities.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Trona	Annual trona production would rise from 5 million tons in the early 1990s to 6 million tons per year in 1995 and remain at this level through 2010 for a cumulative economic output (direct, indirect, and induced) of approximately $9.2 billion over the 19-year period.	Annual trona production would remain at 5 million tons through 2010 for a cumulative economic output (direct, indirect, and induced) of approximately $8.0 billion over the 19-year period.	Same as Proposed.	Same as Proposed.
Oil and Gas	Annual oil and gas production would peak in 1996 (Table A12-1-16) and then decline through 2010. The cumulative economic output for oil would be approximately $3.8 billion and approximately $8.7 billion for gas.	Same as Proposed.	Annual oil and gas production would increase and peak in 2009 and decline in 2010. The cumulative economic output for oil would be approximately $5 billion and approximately $11.4 billion for gas.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Coal	Annual coal production would increase and peak in 2005 and then decline through 2010. The cumulative economic output for coal would be approximately $10.4 billion.	Same as Proposed.	Annual coal production would increase and peak in 2009 and decline in 2010. The cumulative economic output for coal would be approximately $11.3 billion.	Annual coal production would increase and peak in 1998 and then decline through 2010. The cumulative economic output for coal would be approximately $9.8 billion.
Livestock	It is assumed that actual livestock use (180,000 AUMs per year) would remain constant through 2010, although the potential to use 318,647 AUMs per year exists. The cumulative economic output for livestock for 20 years would be approximately $597 million from 180,000 AUMs per year.	Same as Proposed.	Livestock use levels could increase to a maximum of 318,647 AUMs per year for a cumulative economic output of approximately $1.1 billion.	Same as Proposed.
Recreation	Recreation use would increase by 12,734 recreation days per year through 2010. The cumulative economic output would be approximately $802 million.	Recreation use remains constant each year through 2010. The cumulative economic output would be approximately $610 million.	Recreation use would increase by 16,980 recreation days per year through 2010. The cumulative economic output would be approximately $886 million.	Recreation use would increase by 8,490 recreation days per year through 2010. The cumulative economic output would be approximately $732 million.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
SOCIOECONOMICS (Considering the Expanded Impact Analysis Area)	Activities occurring today would be expected to continue in the future. There would be some increases in mineral production in the short term leading to a slight decline in the long term as older wells and mines cease producing and are abandoned. Initiation of new drilling activities and mining activity could create a boom type situation in the communities of Rock Springs and Green River (particularly since many goods and services are provided from these communities for the cumulative area) in that demands on housing and schools would increase for the development period. This is not anticipated to be as extreme as it was in the mid-1970s because there are now some facilities in place that were not available during the previous boom. These include recreation facilities, new schools, and new water and sewer lines. Businesses would be likely to increase their staffing to facilitate demands in the area.	The cumulative effects of projected levels of developments and revenues (see Appendix 12) would be affected, as opportunities for coal and locatable mineral development would be reduced. However, increased oil and gas production along with continued mineral developments such as trona and some coal, would provide economic stability to the area. An increase in population could occur, increasing the need for supporting facilities. Impacts on infrastructure of local communities and governments, particularly schools and housing, could continue.	Alternative B would create a larger effect than Alternative A, particularly on revenues and on community infrastructures. Operating costs would be reduced, providing opportunities for some increases in development and related revenues.	Development and other activities would still occur to some degree in much of the area. However, Alternative C would lessen effects to infrastructures but also reduce revenues from Alternative A.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
SOCIOECONOMICS (Considering the Expanded Impact Analysis Area) (continued)	No specific information on attitudes toward this Proposed Plan has been collected. However, based on attitudes toward specific issues (see Public Participation in Chapter 5), people who are concerned with increased soil and watershed protection, enhancement of cultural and historical features, wildlife habitat enhancement, increased recreation access, and development and control over ORVs may feel their concerns are partially addressed. Those concerned with maximizing opportunities for mineral and energy exploration and development may feel their issues are not adequately addressed. Those interested in enhancing livestock grazing may be concerned by the possible decrease in use periods and new restrictions on grazing although some of these concerns may be offset by new range improvements.	Same as Proposed.	Effects would be similar to the Proposed Plan except those concerned with maximizing opportunities for mineral and energy exploration and development and those interested in enhancing livestock grazing may feel their issues were best addressed in this alternative.	Same as Proposed.
	Increase in employment would be important regionally, and would have a positive impact on social well being in individual cases.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
SPECIAL STATUS PLANT SPECIES MANAGEMENT (Within the Planning Area Only)	Special status plant species and habitats would benefit from search and avoidance measures being applied to populations; closing populations to surface disturbing activities, mineral material sales, mineral entry, and realty actions; and the acquisition of approximately 1,900 acres of habitat.	Special status plant species and habitats would benefit from closing populations to mineral leasing; surface disturbing activity; mineral material sales; and realty actions. No lands would be acquired, which would reduce benefits from the Proposed Plan. Mining operations on existing claims could severely damage or destroy existing plant communities and remove potential habitat.	Special status plant species and habitats would benefit to a lesser extent than the Proposed Plan and Alternative A from avoidance and practices for surface disturbing activities. No lands would be acquired, which would reduce benefits from the Proposed Plan.	Special status plant species and habitats would benefit from closing populations to mineral leasing, and withdrawing them from other mineral or surface disturbing activity, and acquiring approximately 1,900 acres of plant habitat.
	Activity on existing mining claims, livestock and wild horse concentrations, weed control, and unauthorized ORV use may adversely impact special status plant species.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Fire suppression activities would be designed to protect the plants and their habitat and would eliminate adverse effects.	Fire suppression activities could adversely affect these plants and their habitat.	Same as Alternative A.	Same as Proposed.
	Timber harvest activities would not result in adverse effects to special status plant species.	Same as Proposed.	Increased timber harvest activity and fewer restrictions under this alternative would create adverse effects to special status plant species populations.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
SPECIAL STATUS PLANT SPECIES MANAGEMENT (Considering the Expanded Impact Analysis Area)	Development activities, such as those associated with recreation sites and minerals actions, could have an impact on Special Status (Candidate) Plant species in areas where several different resource concerns may limit options for placement of development facilities. However, increased inventory for these species in areas projected for development could provide more information about rare plant species and their status.	Same as Proposed.	Known locations of special status plant species would be open to mineral location, potentially causing the removal and irretrievable loss of plants. All other impacts would be the same as described in the Proposed Plan.	Some known locations of special status plant species in the expanded analysis area would be open to mineral leasing, potentially causing the removal and irretrievable loss of plants. All other impacts would be the same as described in the Proposed Plan.
	Grandfathered mining claims and unauthorized uses could impact these species through unavoidable surface disturbance. Mineral location activities and the use of explosives on Special Status Plant habitat would cause removal and irretrievable loss of plants. However, impacts from future mineral location activities would be minimal.	Impacts could occur to plants in areas that are not withdrawn from mineral location activities. All other impacts would be the same as described in the Proposed Plan.	Same as Alternative A.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
SPECIAL STATUS PLANT SPECIES MANAGEMENT (Considering the Expanded Impact Analysis Area) (continued)	Intensive development associated with the expansion area could cause greater impacts to Special Status Plant species because of more conflicting demands on the land and its resources. Although avoidance is the preferred form of mitigation, avoidance of Special Status Plant populations would become increasingly difficult with more concentrated levels of mineral developments and associated activities, potentially leading to listing some species as Threatened or Endangered.	Same as Proposed.	Same as Proposed.	Same as Proposed.
VEGETATION (Within the Planning Area Only)	There would be a short-term increase of annual weeds and a short-term decrease in vegetation production on the 67,700 acres proposed for prescribed burns. However, there would be a long-term increase in grass species and vegetation production. Wildfire would create a similar effect for both short and long term.	There would be a short-term increase of annual weeds and a short-term decrease in vegetation production on the 26,700 acres proposed for prescribed burns. However, there would be a long-term increase in grass species and vegetation production. Wildfire would create a similar effect for both short and long term.	There would be a short-term increase of annual weeds and a short-term decrease in vegetation production on the 290,000 acres proposed for prescribed burns. However, there would be a long-term increase in grass species and vegetation production. Wildfire would create a similar effect for both short and long term.	There would be a short-term increase of annual weeds and a short-term decrease in vegetation production on the 41,000 acres proposed for prescribed burns. However, there would be a long-term increase in grass species and vegetation production. Wildfire would create a similar effect for both short and long term.
	Limitation of utilization of riparian vegetation based on proper functioning condition status (Appendix 9-2) would benefit riparian areas and should lead to healthier, more diverse and more widespread riparian vegetation.	Riparian areas could decline over the long term.	Localized overuse of forage would increase over Alternative A.	Greater benefit to riparian areas would be realized than under the Proposed Plan (more proper functioning condition area).

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
VEGETATION (Within the Planning Area Only) (continued)	A short-term impact would occur from the construction of rangeland improvement projects removing vegetation (about 105 acres); however, a long-term benefit to overall vegetation production through improved distribution would occur.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 95,941 acres of vegetation would be disturbed. About 41,192 acres would be reclaimed, leaving about 54,749 acres disturbed in the long term (longer than 20 years). Much of this acreage would eventually be reclaimed. Acreage of vegetation disturbed is important not only from the standpoint of direct vegetation loss, but also because of the avenue provided for the expansion of native and introduced weeds.	About 90,552 acres of vegetation would be disturbed. About 41,306 acres would be reclaimed, leaving 49,246 acres disturbed in the long term. Effects would be less than described in the Proposed Plan.	About 110,515 acres of vegetation would be disturbed. About 49,958 acres would be reclaimed, leaving 60,557 acres disturbed in the long term. This would be a greater effect to the vegetation resource than either Alternative A or the Proposed Plan.	About 89,769 acres of vegetation would be disturbed. About 39,010 acres would be reclaimed, leaving about 50,759 acres disturbed in the long term. Effects would be similar to those in Alternative A and less than either Alternative B or the Proposed Plan.
	Land disposals would result in an irreversible and irretrievable loss of the vegetation resource as most disposals are for urban expansion or industrial development.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	No similar impact.	No similar impact.	Activation of suspended grazing preference could result in severe over grazing in the short term and a long-term decline in trend of range condition.	No similar impact.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
VEGETATION (Within the Planning Area Only) (continued)	Closure of some areas to ORV use, and restriction of some areas to designated roads and trails would allow recovery of vegetation on closed roads and would benefit the vegetation resource.	No roads and trails would revegetate as none would be closed.	Less vegetative recovery would occur than for the Proposed Plan due to fewer road closures; however, more would occur than for Alternative A.	Greater vegetative recovery would occur than for the Proposed Plan due to more road closures.
VEGETATION (Considering the Expanded Impact Analysis Area)	Vegetation and habitat quality would improve in some areas; however, more surface disturbance from development, recreational, and ORV activities could occur. Effects could become more severe when high intensity development occurs over broader areas. One result could be a reduction in forage availability and, consequently, livestock and wildlife use.	Development activities, such as those associated with recreation sites and minerals actions, and use authorizations such as livestock grazing, could affect vegetation quality, diversity, density, and general health; however, reclamation prescriptions and livestock management practices would reduce this effect area-wide. Vegetation and habitat quality would improve in some areas. Effects could become more severe when high intensity development occurs over broader areas. One result could be a reduction in forage availability and, consequently, particularly livestock and wildlife use.	Impacts would be greater than those described under Alternative A as more acreage would be disturbed. The cumulative effect of surface disturbing activities, developments and land disposals would increase effects to vegetation communities.	Impacts would be similar to those described under Alternative A. The cumulative effect of surface disturbing activities, developments and land disposals would still affect vegetation communities, but these would not be as extensive as described for Alternative A.
VISUAL RESOURCES (Within the Planning Area Only)	The Proposed Plan would provide the greatest benefit to visual quality as 681,560 acres would be managed for a VRM II classification, maintaining intact the overall landscape character in these areas.	Benefits to visual resources would be provided as 423,000 acres would be managed for a VRM II classification, maintaining intact the overall landscape character in these areas.	Fewer benefits to visual resources would be provided as 390,000 acres would be managed for a VRM II classification, maintaining intact the overall landscape character in these areas.	More benefits to visual resources would be provided than for Alternative A as 500,000 acres would be managed for a VRM II classification, maintaining intact the overall landscape character in these areas.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
VISUAL RESOURCES (Within the Planning Area Only) (continued)	The avoidance of identified areas not suitable for linear rights-of-way would protect the sensitive visual resources in these areas.	Same as Proposed.	Fewer areas would be identified as avoidance areas not suitable for linear rights-of-way. Overall, linear rights-of-way would have a significant impact to visual resource management.	Same as Proposed.
	Restrictions on surface disturbance, surface occupancy, and geophysical vehicle use on historic trails, cultural sites, and the South Pass Historic Landscape would protect and enhance visual resources in these areas.	Limited restrictions on surface disturbance, surface occupancy, and geophysical vehicle use on historic trails, cultural sites, and the South Pass Historic Landscape would not fully protect visual resources in these areas.	Same as Alternative A.	Same as Proposed.
	Management of riparian areas and forest lands for habitat quality and watershed values would benefit visual resources.	Management of riparian areas and forest lands would provide less benefit to visual resources than the Proposed Plan.	Same as Alternative A.	Same as Proposed.
	Vegetation treatment prescriptions would enhance visual resources.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Closure of areas around Boars Tusk and Steamboat Mountain-Killpecker Dunes to surface mining activities and surface occupancy would benefit visual resources.	Surface disturbing activities around Boars Tusk and Steamboat Mountain-Killpecker Dunes would result in long-term adverse visual impacts in these areas.	Same as Alternative A.	Same as Proposed.
	Required plans of operations for surface disturbance in special management areas would benefit visual values by ensuring measures would be applied to maintain visual integrity in those areas.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
VISUAL RESOURCES (Within the Planning Area Only) (continued)	Limiting geophysical vehicles to designated roads and trails in the South Pass Historic Landscape would protect visual resources in that area.	Geophysical activity would be allowed within the South Pass area which could jeopardize the scenic values of the area.	Same as Alternative A.	Same as Proposed.
	A loss of visual resource values could occur on 2,251,810 acres managed consistent with the Class IV visual resource management classification.	A loss of visual resource values could occur on 2,858,000 acres managed consistent with the VRM Class IV visual resource management classification.	A loss of visual resource values could occur on 3,006,000 acres managed consistent with the Class IV visual resource management classification.	A loss of visual resource values could occur on 2,783,000 acres managed consistent with the Class IV visual resource management classification.
	Management prescriptions for portions of the Big Sandy and Sweetwater rivers would protect scenic values.	Scenic values along portions of the Big Sandy and Sweetwater rivers would be impacted from potential development.	Same as Proposed.	Same as Proposed.
	ORV management prescriptions would help retain visual quality to a greater extent than Alternative A by limiting the extent to which new trails would be created.	In areas where ORV management prescriptions would limit the extent to which new roads and trails would be created (closed areas, areas of designated roads and trails), visual quality could be retained.	Same as Proposed.	Same as Proposed.
VISUAL RESOURCES (Considering the Expanded Impact Analysis Area)	No additional effects would occur either to or from the expanded analysis area relative to visual resources.	Same as Proposed.	Same as Proposed.	Same as Proposed.
WATERSHED/SOILS (Within the Planning Area Only)	More benefits than for Alternative A would occur to watershed resources from mitigation measures and particularly no surface occupancy area and right-of-way avoidance/ exclusion areas preventing disruption of soil and watershed values.	Benefits for Alternative A would occur to watershed resources from mitigation measures and particularly no surface occupancy area and right-of-way avoidance/ exclusion areas preventing disruption of soil and watershed values.	Benefits would be fewer than Alternative A or the Proposed Plan due to increased activity and fewer NSO and right-of-way avoidance/ exclusion areas.	Benefits would be greater than the Proposed Plan due to more NSO and right-of-way avoidance/ exclusion areas and additional prescriptions for protection.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WATERSHED/SOILS (Within the Planning Area Only) (continued)	Increased ORV management and control of recreation use along riparian areas and streams would reduce compaction and erosion of soils, stream sedimentation, and loss of riparian areas.	Lack of ORV management would impact soil stability and uncontrolled recreation use in riparian areas would adversely impact water quality and soils.	Reduced ORV management and increased recreation would result in increased loss of soils through erosion and increased adverse impacts to riparian areas.	Same as Proposed.
	Achieving proper functioning condition in streams and riparian areas would greatly benefit watershed and soil resources.	Same as Proposed.	Achieving proper functioning condition on fewer riparian areas would benefit watershed and soils less than Proposed.	Achieving proper functioning condition on more riparian areas would benefit watershed and soils more than Proposed.
	No similar impact.	Same as Proposed.	Same as Proposed.	Riparian areas would benefit from closure to livestock grazing.
WATERSHED/SOILS (Considering the Expanded Impact Analysis Area)	Impacts would be somewhat less than described for Alternative A. This alternative would provide for reclamation of current and future surface disturbances. Constraints on surface disturbing activities on steep slopes will help maintain soil stability thereby reducing sediment load. Revoking withdrawals and allowing increased locatable mineral development has the potential of causing adverse effects on a local scale.	The greater the degree of surface disturbance the greater the potential for adverse impacts to water quality. Soil productivity would continue to be disrupted in areas with surface disturbance, but with proper management this would be temporary and short term. This principle applies to immediate and cumulative impacts.	Alternative B would produce the greatest disturbance, and thus the greatest potential impact. Increased development of resources would cause a temporary increase in disturbed landscapes and consequently could increase soil loss and subsequent sedimentation.	This alternative would provide for the greatest conservation of watershed resources due to a decline in surface disturbing activities and implementation of management prescriptions.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WATERSHED/SOILS (Considering the Expanded Impact Analysis Area) (continued)	With mitigation and proper management practices, increased sedimentation should be containable. Not leasing areas for mineral development, constraining road location and rights-of-way, and requiring designed road plans should reduce soil erosion. Application of guidelines from EPA's Stormwater Discharge policy would aid in maintaining landscape stability.	Increased sedimentation could result from any activity which disturbs vegetation and causes soil compaction, such as road and pad construction, livestock trampling, recreational use (especially off-road vehicle activity), and timber harvesting. Concomitant with loss of vegetative cover and soil loss is increased runoff from denuded surfaces which could de-stabilize drainages. Appropriate mitigation and project design during site specific analysis would minimize off-site sedimentation to a lesser extent than the Proposed Plan.	This alternative would produce the greatest amount of sediment.	Long-term benefits should occur to soils resources as a result of mitigation measures and pro-active efforts to prevent long-term disruption of landscapes decreasing sedimentation.
	Same as Alternative A.	Watersheds which drain into the Green River would be the most affected, since most of the activities occur within these areas. Fontenelle and Flaming Gorge Reservoirs would trap most sediment transported by the Green River.	Same as Alternative A.	Same as Alternative A.
WILD HORSES (Within the Planning Area Only)	Loss of forage would occur due to development affecting approximately 4,568 AUMs.	Loss of forage would occur due to development affecting approximately 4,109 AUMs.	Loss of forage would occur due to development affecting approximately 5,052 AUMs.	Loss of forage would occur due to development affecting approximately 4,003 AUMs.
	Prescribed burning on 67,700 acres and wildfire would result in increased productivity of forage.	Prescribed burning on 26,700 acres and wildfire would result in increased productivity of forage.	Prescribed burning on 290,000 acres and wildfire would result in productivity of forage.	Prescribed burning on 41,000 acres and wildfire would result in productivity of forage.
	No surface occupancy requirements affect project placement and development aimed at improving wild horse distribution.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILD HORSES (Within the Planning Area Only) (continued)	Approximately 30 AUMs would be lost due to construction of range improvements in wild horse herd areas. Development of 15 water facilities would provide a benefit to horses by improving distribution patterns.	Approximately 30 AUMs would be lost due to construction of range improvements in wild horse herd areas. Distribution problems would continue due to a lack of water development in herd areas.	Same as Proposed.	Same as Proposed.
	A long-term increase to full livestock grazing preference could create competition for forage between livestock and wild horses.	Same as Proposed.	Activation of suspended non-use could cause severe competition for available forage between livestock and wild horses.	Same as Proposed.
	Areas with ORV use limited to designated roads and trails would benefit wild horse management. These benefits would accrue as a result of decreased disturbance to the horses and by vegetation recovery on existing trails not designated as open.	Increased ORV activity and a lack of areas where ORV use would be limited to designated roads and trails under this alternative would adversely impact wild horses by increasing disturbance to the horses by ORVs and reduced vegetation recovery as roads and trails would remain available to vehicle use.	Same as Alternative A.	Even less impact to wild horses would occur than under the Proposed Plan due to even greater restrictions on ORV use.
WILD HORSES (Considering the Expanded Impact Analysis Area)	Wild horses would not be adversely affected by activities in the expanded area largely due to their ability to move into other areas, and the large amount of area they have to move into. Long-term displacement would not necessarily affect wild horses as they seem to adapt to activities.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILDLIFE (Within the Planning Area Only)	Management actions under this Proposed Plan would result in fewer adverse impacts to wildlife than Alternatives A and B but more than Alternative C.	Activities would continue to have direct and indirect effects to wildlife habitat, although impacts would be less than under Alternative B. Continuation of existing management would show continued impacts to wildlife habitat both beneficial and adverse.	Increased activity overall and emphasis on production of other commodities would increase adverse effects to wildlife habitat and populations.	Wildlife and fisheries habitat would benefit the most under this alternative.
	Adverse impacts to crucial wildlife habitats from livestock grazing would increase if current non-use AUMs are used.	Same as Proposed.	Adverse impacts to crucial wildlife habitats from livestock grazing would increase over the Proposed Plan.	Same as Proposed.
WILDLIFE (Within the Planning Area Only) (continued)	Development of new AMPs and/or revision of old AMPs to include riparian objectives or to protect other crucial wildlife habitats would occur over the next 20 years and benefits would accrue slowly.	Development of new AMPs and/or revision of old AMPs to include riparian objectives or to protect other crucial wildlife habitats would occur over the next 20 years and benefits would accrue slowly. Until new range surveys or sufficient monitoring is conducted to determine AUM availability, crucial wildlife habitats would continue to decline in some areas.	Development of new AMPs and/or revision of old AMPs to include riparian objectives or to protect other crucial wildlife habitats would occur over the next 20 years and benefits would accrue slowly. Until new range surveys or sufficient monitoring is conducted to determine AUM availability, crucial wildlife habitats would continue to decline in some areas. It would be unlikely that sufficient habitat would be provided to meet WGFD Strategic Plan population objectives.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILDLIFE (Within the Planning Area Only) (continued)	Seasonal constraints would be used to mitigate impacts to wildlife during crucial periods and would provide short-term protection for wildlife. Long-term maintenance and operations activities in crucial wildlife habitats would continue to cause displacement of wildlife from crucial habitats, including disruption of nesting, fawning and calving areas, and crucial big game winter habitats, creating long-term adverse impacts. Effects would be less than Alternative A.	Seasonal constraints provide short-term protection for wildlife. Long-term adverse impacts would continue to occur to wildlife habitat due to production activities and year round use in crucial areas.	Seasonal constraints would not be used in many cases. This would cause impacts to wildlife during critical periods and may directly or indirectly cause displacement or mortality. When seasonal stipulations are used, they provide short-term protection for wildlife. Long-term maintenance and operations activities in crucial wildlife habitats would increase in scope and continue to cause displacement of wildlife from crucial habitats, including disruption of nesting, fawning and calving areas, and crucial big game winter habitats.	Same as Proposed.
	Management prescriptions under this Proposed Plan would provide long-term benefits to wildlife habitat by providing for continued use of crucial habitats. However, displacement and loss of habitat from development and disruptive activities would create an unavoidable adverse impact.	The combination of mineral and livestock activities in crucial wildlife habitats would continue to create impacts that may be unacceptable in some locations. Displacement of part of the Steamboat Mountain elk herd could result in an inability to maintain this herd objective. Displacement and loss of habitat from development and disruptive activities would create an unavoidable adverse impact.	Same as Alternative A.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILDLIFE (Within the Planning Area Only) (continued)	Wildfire would generally result in a short-term loss of habitat but would generally benefit wildlife habitat over the long term. Wildfire could result in a long-term loss of habitat and could be considered an unavoidable adverse impact to the habitat if livestock graze the burned area immediately after the fire.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Land disposals would likely lead to habitat degradation for certain wildlife species. Privatization may result in urban subdivision, commercial development, or agricultural development, changing the habitat character.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Surface mining could result in an irreversible irretrievable loss of wetlands and springs, and although off-site mitigation occurs, the original site would be lost. Highway and major road development also result in irretrievable losses of habitat as they are generally permanent structures.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Eight sage grouse leks or portions of their habitat could be adversely affected by coal development.	Same as Proposed.	Eleven sage grouse leks or portions thereof may be adversely affected by coal development.	No similar action.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILDLIFE (Considering the Expanded Impact Analysis Area)	The effects to wildlife habitat would be lessened somewhat from Alternative A mostly due to transportation planning, and management prescriptions for surface disturbing and disrupting activities. However, the capability of crucial habitats to support some herd objective numbers for big game would still be adversely affected.	The combined effects of habitat fragmentation, access, surface and human disturbances, and availability of forage and competition from livestock grazing could adversely affect the capability of crucial habitats to support herd objective numbers in some areas.	The effects would be greater than those described for Alternative A. Additionally, seasonal constrains would not be applied under this alternative which would have a direct affect on the ability of a crucial winter range to support population objectives, especially for elk.	The effects would be lessened from those described for Alternative A due to transportation planning, fewer developments, and management prescriptions for livestock grazing. However, the combined effects of habitat fragmentation, access, surface and human disturbances and availability of forage could still affect the capability of some crucial habitats to support herd objective numbers.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WILDLIFE (Considering the Expanded Impact Analysis Area) (continued)	Effects could be less than described for Alternative A due to increased mitigation efforts such as those proposed for Steamboat Mountain and the Wind River Front. Such prescriptions as remote monitoring, operations, more facilities concentrated on one particular area, and transportation planning would reduce the effects from Alternative A.	Habitat fragmentation, particularly for wildlife, would occur in some areas, especially in areas with many access roads and surface disturbances. Transportation routes tend to dissect habitats and can act as barriers to some species, especially in severe winter conditions. This can also increase the accessibility to the general public into areas that have previously been somewhat inaccessible to vehicles. This would become more important and increase adverse effects to wildlife as increased demands for use of public lands occur. Migration routes could be altered, changing some traditional use patterns on a local level. For example, it may become harder for antelope to populate the Grand Teton and Jackson Hole areas if they are unable to migrate to their traditional wintering grounds around Rock Springs. Seclusion areas for wildlife would become smaller and more dispersed. This could diminish the ability to maintain current population objectives for big game species. Loss of crucial antelope winter range around Rock Springs due to community expansion places more demands on adjacent wintering areas.	More adverse effects would occur due to fewer constraints. Increased access would be provided to the public due to development activities in crucial winter ranges which would increase effects over Alternative A.	Adverse effects would be reduced from Alternative A due to proposed management actions. However, activities would still occur that would affect wildlife habitat.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
DESIGNATED SPECIAL MANAGEMENT AREAS				
Cedar Canyon ACEC	Management activities could have some long-term adverse effects on resource values in the ACEC, but effects would be reduced due to management prescriptions and restrictions.	Management activities would have greater adverse effects on resource values in the ACEC than under Proposed.	Same as Alternative A.	Same as Proposed.
	Visual integrity of the petroglyph setting would be protected by preventing activities within 1/2 mile of petroglyphs and by closing 500 acres to filing of mining claims and land disposal.	Visual intrusions within 1/2 mile could destroy the integrity of the petroglyph setting.	Same as Alternative A.	Same as Proposed.
	Big game habitat would continue to decline due to increased development but this decline would be lessened due to implementation of reclamation plans.	Big game habitat would continue to decline due to development activity.	Same as Alternative A.	Same as Proposed.
	Management prescriptions for surface disturbing activities would benefit cultural values and wildlife habitat.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Effects of yearlong livestock activity would affect wildlife habitat through displacement, forage competition, and social interaction. These should decline in the long term once site specific plans are in place.	Effects of yearlong livestock activity would affect wildlife habitat through displacement, forage competition, and social interaction. These effects would continue for the long term.	Same as Alternative A.	Same as Proposed.
	ORV users would be impacted by restrictions limiting vehicle travel to designated roads and trails.	ORV users would benefit as existing roads and trails remain open to use.	Same as Alternative A.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Cedar Canyon ACEC (Considering the Expanded Impact Analysis Area)	No additional effects would occur either to or from the expanded analysis area relative to Cedar Canyon ACEC.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Greater Red Creek Proposed ACEC (General)	The proposed management actions would offer protection to fisheries and watershed values and reduce erosion caused by human activities.	This alternative would allow erosion caused by human activities to continue in these watersheds.	This alternative would offer the least protection of fisheries and watersheds of all alternatives and allow erosion caused by human activities to continue.	This alternative would offer the greatest protection to fisheries and watershed values and reduce erosion caused by human activities.
	It is possible that there would be a loss of revenue from mineral development due to closure in specified areas to mineral leasing, mineral location, sodium exploration, and material sales.	It is possible that there would be a loss of revenue from sodium minerals development only due to closure of Currant Creek to sodium exploration.	The area would be open to mineral development, and revenues from mineral development could be generated.	Currant Creek and Red Creek would be closed to mineral leasing, material sales, and sodium exploration which would protect resource values but could result in a loss of revenue from mineral development.
	ORV activity would be limited to designated roads and trails which would restrict recreational users, but would reduce erosion and sedimentation.	ORV activity would be limited to existing roads and trails which would not restrict recreation users, but which would allow sedimentation to continue at a higher rate than the Proposed Plan or Alternative C.	Same as Alternative A.	Same as Proposed.
	Closure to mineral location and entry under the land laws of 79,620 acres would protect the areas from adverse effects to sedimentation, siltation, and erosion, associated with locatable mineral exploration and development.	Retaining the existing closure to mineral location and entry under the land laws would protect the areas from adverse effects to sedimentation, siltation, and erosion, associated with locatable mineral exploration and development.	Opening the area to mineral location or entry under the land laws could create adverse effects to sedimentation, siltation, and erosion from locatable mineral exploration and development.	Closure to mineral location and entry under the land laws of 131,890 acres would protect the area from the adverse effects to sedimentation, siltation, and erosion associated with mineral location and development.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Red Creek Proposed ACEC (continued) ***Currant Creek/Sage Creek Watersheds***	Water quality and fisheries habitat in Currant Creek would benefit from closing the area to surface disturbances.	Same as Proposed.	Management prescriptions allowing surface disturbing activities in Currant Creek would allow additional actions which could adversely affect water qualities and fisheries habitat.	Same as Proposed.
	Surface disturbing activities would avoid the Sage Creek watershed. Watershed values would benefit by reducing the potential for sedimentation and erosion.	Sage Creek would benefit from mitigation plans for surface disturbing activities which would be designed to control sedimentation and erosion.	Same as Alternative A.	Same as Proposed.
	Impacts to watershed values and water quality from ORV activity would be reduced once transportation planning is completed.	Transportation planning would not be completed and ORV activity could adversely affect water quality, watershed values, and fisheries habitat.	Same as Alternative A.	Same as Proposed.
	Designation of Currant Creek as an exclusion area and the avoidance of rights-of-way within Sage Creek would require major reroutes of facilities, but would offer greater protection than Alternative A from erosion, sedimentation, and siltation.	Designation of all but Sage Creek as a right-of-way avoidance area would require major reroutes of facilities and would offer protection from erosion, sedimentation, and siltation.	No designation of rights-of-way avoidance areas would facilitate rights-of-way development. However, erosion, sedimentation, and siltation would increase.	Designation of rights-of-way avoidance areas throughout the area and excluding rights-of-way from Currant Creek and Pine Mountain and Sugarloaf Basin would require major reroutes of facilities to a greater extent than Alternative A but would protect the watershed from erosion, sedimentation, and siltation (see Table 2-19).
	Beneficial effects could occur to water quality, watershed values, and fisheries habitat in Sage Creek by reducing the potential for erosion and sedimentation from surface disturbing activities.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Red Creek Watershed	Accelerated erosion would decrease over the long term with improvement of riparian areas, vegetation management, transportation planning, and constraints on development.	Maintaining status quo would continue to allow accelerated erosion associated with human activities. Accelerated erosion could have adverse effects which would add to the sedimentation loading in the Green River. This would be nationally and internationally significant.	Same as Alternative A.	Soil erosion rates should decrease the most with this alternative with improvement of riparian areas, vegetation management, road closures, and restrictions on development.
	Due to livestock grazing and riparian management prescriptions, riparian areas would improve over the long term.	Adverse effects would occur to riparian values due to continued livestock grazing management.	Activation of full and suspended grazing preference would increase adverse effects to riparian and watershed values.	No grazing would be allowed on 800 acres of riparian for 3 years to allow for re-establishment of willow stands which would reduce bed load and suspended sediment and improve watershed values and riparian areas.
	Preparing a transportation plan and closing and rehabilitating unnecessary roads and trails would reduce erosion and sedimentation from those trails and from off-road vehicle use.	ORV use would continue to create additional two-track trails and subsequent erosion and sedimentation would continue.	Same as Alternative A.	Only those roads necessary for management of the area would be kept open and subsequent rehabilitation of other roads would reduce erosion and sedimentation to a greater extent than the Proposed Plan.
	Closure of the area to pipelines and facilities would reduce accelerated erosion.	The area remaining open to the construction of pipelines and facilities would remove vegetation and contribute to increases in accelerated erosion.	Same as Alternative A.	Same as Proposed.
	No adverse effects to watershed values would occur from locatable mineral development and exploration activities as the area would be closed to such activity.	Minimal adverse effects would occur to watershed values from locatable mineral development and exploration activity as the current withdrawal that covers most of the area would be retained.	Adverse impacts could occur to watershed values from locatable mineral development and exploration activity as the current withdrawal that covers most of the area would be revoked.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Red Creek Watershed (continued)	No new disturbances from mineral development activities would benefit the watershed values.	Increased disturbances due to mineral related exploration and development activity could occur which could result in adverse effects to watershed values through increased surface disturbing activity.	Same as Alternative A.	Same as Proposed.
	Designation of Red Creek as an exclusion area would require major reroutes of facilities, but would offer greater protection from erosion, sedimentation and siltation than Alternative A.	Designation of Red Creek as a right-of-way avoidance area would require major reroutes of facilities and would offer protection from erosion, sedimentation, and siltation.	Same as Alternative A.	Same as Alternative A.
	Closure of the right-of-way concentration area through Red Creek would offer additional protection to that portion of the watershed.	Keeping the present right-of-way concentration area open would facilitate rights-of-way development. Erosion, sedimentation, and siltation would continue on that portion of the watershed.	Keeping the present right-of-way concentration area open, and adding an additional route in Telephone Canyon, would facilitate rights-of-way development. Erosion, sedimentation, and siltation would increase.	Same as Proposed.
Greater Red Creek Proposed ACEC **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur either to or from the expanded analysis area relative to the Greater Red Creek Proposed ACEC.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Greater Sand Dunes ACEC Western Portion	No impacts are anticipated with implementation of the prescribed management actions and restrictions and with implementation of the Interim Management Guidelines for Lands Under Wilderness Review.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Sand Dunes ACEC Eastern Portion	Management prescriptions and would minimize effects to geological, cultural, visual, and wildlife habitat. Effects from mineral development, rights-of-way construction, and ORV use and residual effects would be minor but would include:	Same as Proposed.	Adverse effects would occur to geological, cultural, and visual values and wildlife habitat. Additional impacts would occur from increased mineral development and rights-of-way construction. Off-road vehicle use would be reduced on 5,000 acres and residual effects would include:	Same as Proposed.
	-Seasonal displacement of elk, deer, and wild horses through ORV activity.	-Same as Proposed.	-Same as Proposed.	-Same as Proposed.
	-Additional development in the Sand Dunes ACEC would have a direct effect on the ability of the area to support deer and elk objective numbers. This would place more importance on other undeveloped areas such as Steamboat Rim. Displacement of deer and elk into smaller habitat locations would increase competition and could lead to deterioration of these areas.	-Same as Proposed.	-Same as Proposed.	-Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Sand Dunes ACEC Eastern Portion (continued)	-Potential impacts would be analyzed in the comprehensive site-specific leasing plan that would be developed for Steamboat Mountain and the Greater Sand Dunes before development would occur. This should benefit wildlife habitat in the area.	-No similar action.	-No similar action.	-No similar action.
	-Loss of up to approximately 155 acres of vegetation through oil and gas development.	-Loss of up to approximately 98 acres of vegetation through oil and gas development.	-Loss of up to approximately 359 acres of vegetation through oil and gas development.	-Same as Proposed.
	-Reductions in the visual integrity of the Greater Sand Dunes area through surface facilities (e.g., pump jacks, tanks, dehydrators, etc.) associated with the development of up to 40 new oil and gas wells.	-Reductions in visual integrity through surface facilities associated with the development of up to 25-30 new oil and gas wells.	-Reductions in visual integrity through surface facilities associated with the development of up to 100 new oil and gas wells. This would affect the ability to retain the scenic quality for the area.	-Same as Proposed.
	-An increase in safety hazards to ORV users through the development of oil and gas related surface facilities (e.g., pipelines, snow fencing, etc.). This alternative would be less hazardous to off-road vehicle users than Alternative B.	-Same as Proposed.	-Although 5,000 acres would not be open to off-road vehicle use, there would still be an increase in safety hazards to ORV users through the development of oil and gas related surface facilities (e.g., pipelines, snow fencing, etc.).	-Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Sand Dunes ACEC Eastern Portion (continued)	-Trampling and use of dune ponds and adjacent riparian habitat would continue to be affected by livestock, wild horse, and wildlife use.	-Same as Proposed.	-Same as Proposed.	-Same as Proposed.
	Beneficial effects would be realized through the implementation of the proposed management prescriptions include:	Same as Proposed.	Same as Proposed.	Same as Proposed.
	-Protection of sensitive cultural resource sites.	-Same as Proposed.	-Same as Proposed.	-Same as Proposed.
	-Protection of the structures and historical setting of the Crookston Ranch.	-Same as Proposed.	-Same as Proposed.	-Same as Proposed.
	-Protection of Native American religious and important geological values associated with Boars Tusk.	-Same as Proposed.	-Same as Proposed.	-Same as Proposed.
	-Enhanced wildlife habitat, visual, and wilderness values through acquisition of approximately 1,920 acres.	-Same as Proposed.	-Same as Proposed.	-Same as Proposed.
	-Retention of approximately 10,500 acres as an "open" ORV area for recreational use.	-Retention of approximately 11,964 acres as an "open" ORV area for recreational use.	-Retention of approximately 5,500 acres as an "open" ORV area for recreational use.	-Same as Proposed.
	-Maintaining forage and native plant composition for wildlife.	-Maintaining some forage and native plant composition for wildlife.	-Same as Alternative A.	-Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Greater Sand Dunes ACEC **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur either to or from the expanded analysis area relative to the Greater Sand Dunes ACEC.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Natural Corrals ACEC	Proposed management actions would be beneficial to cultural resources by protecting their integrity of setting.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Short-term impacts, due to livestock grazing, would adversely affect riparian zones until riparian management actions are implemented.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Locatable mineral development outside the existing withdrawal area would adversely affect the geologic, cultural, and recreation values, and wildlife habitat in the ACEC.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Closing the ACEC to coal development would benefit the geologic, cultural, and recreational values in the ACEC.	Coal development on 160 acres would adversely affect the geologic, cultural, and recreational values in the ACEC.	Coal development on 633 acres would adversely affect the geologic, cultural, and recreational values in the ACEC.	Same as Proposed.
	Management consistent with the Class II visual resource management classification would benefit the geologic, cultural, and recreation values in the ACEC.	Management consistent with the Class IV visual resource management classification would allow landscape modification which could adversely affect geologic, cultural, and recreation values in the ACEC.	Same as Alternative A.	Management would allow for less modification of the landscape than in Alternative A.
Natural Corrals ACEC **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur either to or from the expanded analysis area relative to the Natural Corrals ACEC.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Oregon Buttes ACEC	The historic landmark values of the ACEC would benefit from resource management actions that constrain surface disturbing activities and off-road vehicle use.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	The provision for dispersed non-motorized recreation use in the area would limit some users or uses because of the inability to utilize motorized vehicles in the area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Oregon Buttes ACEC **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur either to or from the expanded analysis area relative to the Oregon Buttes ACEC.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Pine Springs ACEC and Proposed Expansion Area	Management prescriptions for the existing ACEC and the expanded area encompass large concentrations of stone circle archeological sites would be beneficial to cultural resources by preserving their integrity of the archeological sites (see Table 2-19).	Retention of the existing 90-acre ACEC would protect the cultural values within that 90 acres.	Same as Alternative A.	Same as Proposed.
	Management actions, including closure to mineral location and disposal, would guarantee the integrity of the Pine Springs stratified archeological site and the stone circle sites in the Twin Butte area.	Management actions would allow some development activities, causing adverse effects to cultural values.	Same as Alternative A.	Same as Proposed.
Pine Springs ACEC and Proposed Expansion Area **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur either to or from the expanded analysis area relative to the Pine Springs ACEC and Proposed Expansion Area.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
South Pass Historic Landscape Proposed ACEC	Adverse effects to historical and scenic resources from surface disturbing activities would be reduced by implementation of management actions (see Table 2-19).	Surface disturbing activities would adversely affect historical and scenic resources.	Same as Alternative A.	Same as Proposed.
	Management prescriptions for the locatable mineral activity would reduce adverse effects to the landscape. Closure to mineral location and entry under the land laws of 5,260 acres would preclude mineral location and disposal, and benefit cultural and historical resources in the landscape.	Locatable mineral activity could create adverse effects to the landscape and cultural and historical values.	Same as Alternative A.	Same as Proposed.
	Exclusion and avoidance areas would protect the visual integrity of the National Historic Trails corridor, but would have a significant impact on the ease with which rights-of-way could be routed through the area.	No restriction on the location of rights-of-way would make it easier to route linear rights-of-way through the area but could result in surface disturbance that would seriously impact the visual integrity of the National Historic Trails corridor.	Same as Alternative A.	Same as Proposed.
South Pass Historic Landscape Proposed ACEC **(Considering the Expanded Impact Analysis Area)**	Impacts upon the visual integrity of historic trails within the expanded impact analysis area would increase the significance of this area due to its excellent visual integrity.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Special Status (Candidate) Plant Species Management	Wildfire, livestock concentration areas, increased recreation use, mining claim activity and trampling by wild horses could cause adverse impacts to actual plant populations and potential habitat.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Special Status (Candidate) Plant Species Management (continued)	Management actions for off-road vehicle use, geophysical activities, and fire suppression within the habitat area would reduce impacts to plant populations.	Management actions for off-road vehicle use, geophysical activities, and fire suppression within the habitat area would cause adverse impacts to plant populations.	Same as A.	Same as Proposed.
	The 1,900-acre land acquisition would benefit management of populations of *Descurainia torulosa*.	Beneficial effects to management of *Descurainia torulosa* from acquisition of 1,900 acres would not be realized.	Same as Alternative A.	Same as Proposed.
	Closure to mineral location and entry under the land laws would reduce effects associated with locatable mineral development and exploration.	Areas would remain open to locatable mineral operations which could damage or destroy plants and habitat.	Same as Alternative A.	Same as Proposed.
Special Status (Candidate) Plant Species Management **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur either to or from the expanded analysis area relative to special status plant species areas.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Steamboat Mountain Proposed ACEC	Surface disturbing activities would take place but at a reduced rate from Alternative A. Management of the area could protect wildlife values and reduce impacts to the elk and deer herds if mitigation took place.	Surface disturbing activities would result in loss of wildlife habitat and displacement of the Sands elk and deer herds on Steamboat Mountain.	Same as Alternative A.	Adverse effects from surface disturbance activities would be less than for the Proposed Plan since the area would be closed to mineral leasing.
	Closure to mineral location and entry under the lands laws of up to 43,270 acres would benefit wildlife habitat but could adversely affect the opportunity for development of locatable minerals.	No additional areas would be closed to mineral location and entry under the land laws which would allow exploration and development of locatable minerals. This could adversely affect wildlife habitat.	Same as Alternative A.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Steamboat Mountain Proposed ACEC **(Considering the Expanded Impact Analysis Area)**	With additional management prescriptions applied, impacts would be reduced from Alternative A for the elk herd. However, similar effects would still occur to the deer herd due to development activities and intrusions into the few areas that offer good fawning, and competition with elk for parturition and winter use areas.	Development activities, human disturbance, competition with livestock, and access into remote areas would significantly affect the ability of the habitat in this area to support deer and elk herd objective levels.	Same as Alternative A.	Due to additional management prescriptions preventing new disturbances and access, impacts would be reduced from Alternative A. The ability to meet herd objectives would not be significantly affected.
White Mountain Petroglyphs ACEC	The existing withdrawal would be retained to protect cultural values which would protect the area from adverse effects associated with locatable mineral exploration and development.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Management prescriptions for surface disturbing activities applied to 1/2 mile surrounding the rock art (petroglyphs) would increase benefits to the visual integrity and traditional cultural values.	Fewer prescriptions for surface disturbing activities on the area surrounding the petroglyphs would affect the visual integrity and traditional cultural values.	Same as Alternative A.	Same as Proposed.
White Mountain Petroglyphs ACEC **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur from those described for the planning area.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
OTHER MANAGEMENT AREAS				
Monument Valley Management Area	Existing withdrawals would not be retained where they no longer serve the purpose for which they were established. However, closures to mineral location and entry under the land laws, based upon a paleontological survey would be accomplished prior to revocation of the existing withdrawal. Beneficial effects to scientific resources would be possible as locatable mineral development and exploration activity would not occur.	Existing withdrawals would be retained. Beneficial effects would occur to scientific resources from continuing existing closures to locatable mineral development and exploration activity.	Revocation of the existing withdrawal would open the area to mineral location and development and entry under the land laws which would create adverse effects to scientific resources.	Same as Proposed.
	With prescribed management for the area, loss of scientific paleontological data or significant fossil resources would be prevented.	There could be a loss of scientific paleontological data or significant fossil resources due to surface disturbing activities.	There could be a significant loss of scientific paleontological data or fossil resources due to surface disturbing activities.	Same as Proposed.
	Management prescriptions for fragile soils and slopes would reduce silt production and sedimentation.	Same as Proposed.	Same as Proposed.	Management prescriptions for fragile soils would be greater than in the Proposed Plan.
Monument Valley Management Area **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur either to or from the expanded analysis area relative to the Monument Valley Management Area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Pine Mountain Management Area	Surface disturbance management prescriptions would provide beneficial effects to watershed, vegetation, recreation, and wildlife values.	Surface disturbance management prescriptions would be reduced compared to the Proposed Plan. Although some beneficial effects would occur to watershed, vegetation, recreation, and wildlife values, they would be less than the Proposed Plan.	Same as Alternative A.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Pine Mountain Management Area (continued)	Opportunities would be available for development activities which would provide a positive effect for those activities. However, costs of doing business could increase and the level of development would be constrained.	Same as the Proposed Plan except the costs would be reduced.	Same as Alternative A.	Same as Proposed.
	Management prescriptions would benefit groundwater recharge areas.	Management prescriptions would not benefit groundwater recharge areas.	Same as Alternative A.	Same as Proposed.
	Effects to watershed and vegetation resources from ORV activity would be reduced from Alternative A once transportation planning is completed.	ORV activity could adversely affect watershed and vegetation resources.	Same as Alternative A.	Same as Proposed.
	Beneficial effects would occur to watershed, vegetation, and wildlife values from designated rights-of-way avoidance areas.	Adverse effects would occur to watershed, vegetation, and wildlife values from construction of rights-of-way.	Same as Alternative A.	Greater benefits to watershed, vegetation, and wildlife values would occur over the Proposed Plan because rights-of-way would be excluded from this area.
Pine Mountain Management Area ***Four J Basin Watershed***	The vegetation resource would benefit from limited occupancy and surface disturbance, livestock management practices, and reservation of forage for watershed protection.	The vegetation resource would continue to decline as surface disturbing activities and present livestock grazing practices continue.	Same as Alternative A.	The vegetation resource would benefit less than under Proposed. Although disruptive activities would be limited, no proactive recovery action would be taken.
Pine Mountain Management Area **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur either to or from the expanded analysis area relative to the Pine Mountain Management Area.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Red Desert Watershed Management Area	Management prescriptions in areas such as the proposed South Pass Historic Landscape and special status plant species areas would provide benefits for resources in those portions of the area. Management prescriptions for the remainder of the area would allow some development activities which could cause localized adverse effects; however, these would not have a significant impact on the watershed.	Management prescriptions in areas such as South Pass and where special status plant species occur would provide benefits to the resources in those areas. Management prescriptions for the remainder of the area would allow activities that would create adverse effects; however, these would not have a significant impact on the watershed.	Same as Alternative A.	Same as Proposed.
	Adverse effects to visual values from construction of facilities could occur. Effects are expected to be minimal as most activity would occur adjacent to the area.	Long-term impacts could occur to visual values from construction of facilities, particularly powerlines. Most activity is anticipated to occur in the southern checkerboard portion of the area, and visual impacts would be localized to this area. Impacts would be greater than under the Proposed Plan.	Same as Alternative A.	Same as Proposed.
Red Desert Watershed Management Area **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur either to or from the expanded analysis area relative to the Red Desert Watershed Management Area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Management under the Proposed Plan would maximize opportunity for solitude and dispersed recreation. No significant adverse impacts would occur to the recreationist.	Management under Alternative A would reduce the level of solitude and dispersed recreation due to increased oil and gas development. However, the adverse impact should not be significant.	Management under Alternative B would further reduce the level of solitude and dispersed recreation from Alternative A and the Proposed Plan due to higher levels of oil and gas development. The adverse cumulative impact would be considered significant in the southern portion.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Red Desert Watershed Management Area **(Considering the Expanded Impact Analysis Area)** (continued)	Approximately 10 wells would be drilled in the area, and both short- and long-term impacts would be minimal.	Approximately 90 oil and gas wells would be drilled in the area, with 80 anticipated to be drilled in the checkerboard. 173 plugged and abandoned wells already exist in the area. Development activities remove vegetation creating a short-term loss of the vegetation resource with some long-term loss of shrubs as restoration requires 20 years or longer. Impacts to vegetation affects available AUMs for livestock and horses, and wildlife habitat. The amount affected would not be significant.	Approximately 138 wells would be drilled in the area, with 123 anticipated to be drilled in the checkerboard. 173 plugged and abandoned wells already exist in the area.	Same as Proposed.
	Coal mining in relation to the Bridger Mine and Deadman Wash proposed project would affect only a small portion of the watershed.	Same as Proposed.	Same as Proposed.	Coal mining in relation to the Bridger Mine would affect a smaller portion of the watershed than the Proposed Plan.
Sugarloaf Basin Management Area	Surface disturbance management prescriptions would provide a beneficial effect to watershed, vegetation, recreation, and wildlife values.	Surface disturbance management prescriptions would be reduced compared to the Proposed Plan and although some beneficial effects would occur to watershed, vegetation, recreation, and wildlife values, they would be less than the Proposed Plan.	Same as Alternative A.	Same as Proposed.
	Opportunities would be available for development activities which would provide a positive impact for those activities. However, costs of doing business could increase and the level of development would be constrained.	Same as the Proposed Plan except the costs would be reduced.	Same as Alternative A.	Same as Proposed.

TABLE 2-2 (continued)

AFFECTED RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Sugarloaf Basin Management Area (continued)	Management prescriptions would benefit groundwater recharge areas.	Management prescriptions would not benefit groundwater recharge areas.	Same as Alternative A.	Same as Proposed.
	Effects to watershed and vegetation resources from ORV activity would be reduced from Alternative A once transportation planning is completed.	ORV activity could adversely affect watershed and vegetation resources.	Same as Alternative A.	Same as Proposed.
	Beneficial effects would occur to watershed, vegetation, and wildlife values from designated rights-of-way avoidance areas.	Adverse effects would occur to watershed, vegetation, and wildlife values from construction of rights-of-way.	Same as Alternative A.	Greater benefits to watershed, vegetation, and wildlife values would occur over the Proposed Plan because rights-of-way would be excluded from this area.
Sugarloaf Basin Management Area **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur either to or from the expanded analysis area relative to the Sugarloaf Basin Management Area.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Wild and Scenic Rivers Management	Interim management prescriptions would provide a beneficial effect to the outstandingly remarkable values in the area. Some impacts may occur from mining claim activity but the probability is slight.	Development within the river corridors could result in the loss of wild and scenic river values.	Same as Proposed.	Same as Proposed.
Wild and Scenic Rivers Management **(Considering the Expanded Impact Analysis Area)**	No additional effects would occur either to or from the expanded analysis area relative to Wild and Scenic Rivers management.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 2-3

ESTIMATED ANNUAL ALLOWABLE CUT PER TIMBER UNIT

(board feet)

	Allowable Cut 500,000	Allowable Cut 1,000,000
Wind River	250,000	500,000
Pine Mountain	130,000	260,000
Little Mountain	115,000	230,000
Henry's Fork	5,000	10,000

Note: The allowable cut is based on commercial timber acres in each unit.

TABLE 2-4

RIGHTS-OF-WAY AVOIDANCE AND EXCLUSION AREAS BY ALTERNATIVE

AREA	AVOIDANCE				EXCLUSION			
	P	A	B	C	P	A	B	C
Big Sandy River (1/2 mile wide corridor, 1.5 mile long, 480 acres)					X		X	X
Boars Tusk (90 acres)	X	X	X	X				
Cedar Canyon Petroglyphs (Vista, 360 acres)[1]	X	X	X	X				
Cedar Canyon Petroglyphs (20 acres)[1]					X	X	X	X
Crookston Ranch (40 acres)	X	X	X	X				
Dry Sandy Swales (1/4 mile buffer, 125 acres)	X	X		X				
Dry Sandy Swales (20 acres)					X	X		X
Dug Springs Stage Station (10 acres)					X			X
Emmons Cone (60 acres)	X	X	X	X				

TABLE 2-4 (Continued)

RIGHTS-OF-WAY AVOIDANCE AND EXCLUSION AREAS BY ALTERNATIVE

AREA	AVOIDANCE				EXCLUSION			
	P	A	B	C	P	A	B	C
14-Mile Recreation Area (20 acres)	X	X		X				
Greater Red Creek - Currant Creek Drainage (from headwaters west to Currant Creek Ranch (23,740 acres)		X			X			X
Greater Red Creek - Sage Creek Drainage (52,270 acres)	X			X				
Greater Red Creek - Pine Mountain & Sugarloaf Basin (150,080 acres)	X							
Greater Red Creek - Red Creek ACEC (55,880 acres)[2]		X	X	X	X			
Greater Sand Dunes ACEC (70,850 acres)	X	X	X	X				
Historic Trails (1/4 mile buffer, 64,910 acres)	X	X	X					
Historic Trails (1/2 mile buffer, 195,360 acres)				X				
Horse Herd Viewing Area (1/2 mile buffer - 500 acres)	X	X	X	X				
I-80 Point of Rocks to Green River (limited to local service lines)	X	X	X	X				
LaBarge Bluffs Petroglyphs (Vista, 100 acres)[1]	X	X		X				
LaBarge Bluffs Petroglyphs (20 acres)[1]				X	X		X	
LaClede Stage Station (10 acres)					X		X	

TABLE 2-4 (Continued)

RIGHTS-OF-WAY AVOIDANCE AND EXCLUSION AREAS BY ALTERNATIVE

AREA	AVOIDANCE				EXCLUSION			
	P	A	B	C	P	A	B	C
Monument Valley (erosive soil areas and slopes >25%)	X			X				
Native American Burial Sites (2 acres)		X	X		X			X
Natural Corrals ACEC (1,276 acres)					X	X	X	X
North and South Table Mountains (1,280 acres)	X	X		X				
Oregon Buttes ACEC (3,450 acres)	X	X	X	X				
Pilot Butte (120 acres)	X	X	X	X				
Pine Butte (320 acres)		X	X	X	X			
Pine Springs ACEC and Expansion Area (6,030 acres)	X			X				
Pine Springs ACEC (90 acres)		X						
Pine Springs (5,300 acres)			X					
Prehistoric Quarry Site (160 acres)					X	X	X	X
Sage Grouse Leks (1/4 mile buffer, 8,170 acres)	X	X		X				
South Pass Historic Landscape (vista within landscape, 33,700 acres)					X			
South Pass Historic Landscape (within landscape not in vista, 20,080 acres)	X							

TABLE 2-4 (Continued)

RIGHTS-OF-WAY AVOIDANCE AND EXCLUSION AREAS BY ALTERNATIVE

AREA	AVOIDANCE				EXCLUSION			
	P	A	B	C	P	A	B	C
Greater South Pass Historic Landscape (including Oregon Buttes, etc., 87,580 acres)								X
Special Status Plants (actual sites) (3,610 acres)	X	X	X					X
Special Status Plants (potential sites) (39,870 acres)	X	X	X					X
Special Status Plant ACECs (900 acres)		X	X		X			X
Steamboat Mountain ACEC (43,270 acres)	X			X				
Steamboat Mountain ACEC (Communication sites)					X			
Sugarloaf Petroglyphs (Vista, 350 acres)[1]	X	X		X				
Sugarloaf Petroglyphs (20 acres)[1]					X		X	X
Sweetwater River Wild and Scenic Segments (1/2 mile corridor, 6.3 miles long, 2,020 acres)					X		X	X
Sweetwater River Recreational Segments (1/2 mile corridor, 3.4 miles long, 1,090 acres)			X		X			
Tolar Petroglyphs (Vista, 310 acres)[1]	X	X		X				
Tolar Petroglyphs (20 acres)[1]					X	X		X
Tri-Territory Marker (10 acres)					X			X

TABLE 2-4 (Continued)

RIGHTS-OF-WAY AVOIDANCE AND EXCLUSION AREAS BY ALTERNATIVE

AREA	AVOIDANCE				EXCLUSION			
	P	A	B	C	P	A	B	C
White Mountain Petroglyphs (Vista, 480 acres)[1]	X	X	X	X				
White Mountain Petroglyphs (20 acres)[1]					X	X	X	X
Wind River Front[3] (Eastern Portion, 88,510 acres)	X				X			

[1] Petroglyphs and vistas total 1,600 acres.

[2] Greater Red Creek (Red Creek ACEC portion): The existing right-of-way concentration area would be an avoidance area for rights-of-way with no new development authorized from the escarpment south to Richards Gap (subject to review after 10 years). The remainder of the area would be an exclusion area (recognition will be given to the needs of private landowners for access to private property).

[3] Major facilities in the Wind River Front (Eastern Portion) would be excluded. Long linear facilities would be avoided.

TABLE 2-5

PROPOSED WITHDRAWALS BY ALTERNATIVE
(approximate acres)

Site	Proposed Plan	Alternative A	Alternative B	Alternative C	Existing Withdrawal Overlap
Cedar Canyon Petroglyph Site & ACEC	515	0	0	515	
Dug Springs Stage Station	10	0	0	10	Oil Shale
Flaming Gorge Reservoir (BOR)	63	63	63	63	Oil Shale/Coal
Greater Red Creek ACEC:					
(Red Creek/Currant Creek Drainage)	79,620	0	0	79,620	Oil Shale/Coal
Greater Sand Dunes ACEC	25,250	25,250	25,250	41,640	
LaBarge Bluffs Petroglyph Site	20	0	0	20	
LaClede Stage Station	10	0	0	10	Oil Shale
Monument Valley Area[1]	0	0	0	69,940	Oil Shale/Coal
Pine Springs Expansion Area	2,000	0	0	730	Oil Shale/Coal
Prehistoric Quarry Site	160	160	0	160	
Public Water Reserve	9,386	9,386	9,386	9,386	
South Pass Historic Landscape[2]	5,260	0	0	5,260	Coal
Special Status Plant Species	3,610	0	0	3,610.[4]	Oil Shale/Coal
Steamboat Mountain Area[3]	43,270	0	0	43,270	Coal
Sweetwater Recreation Site	80	80	0	0	
Sweetwater River Segment	3,970	0	0	3,970	
Tolar Petroglyph Site	20	0	0	20	
Tri-Territory Marker	10	0	0	10	Coal
Wind River Front (east)[3]	88,510				
TOTALS	**261,764**	**34,859**	**34,699**	**258,234**	

[1] Actual withdrawal acreage for Monument Valley is to be determined by paleontological survey.

[2] Actual withdrawal acreage for South Pass Historic Landscape will be determined upon consultation with other parties of interest.

[3] Actual withdrawal acreage for these areas to be determined upon completion of site specific management plans.

[4] An additional 43,650 acres of plant habitat may be withdrawn from mineral entry upon inventory (includes federal surface/federal minerals and private surface/federal minerals).

TABLE 2-6

WITHDRAWALS TO BE REVOKED OR RETAINED

(approximate acres)

	Proposed Plan	Alternative A	Alternative B	Alternative C
Revoked:				
Classification Withdrawal	1,080,600	-	1,080,600	1,080,600
Coal Withdrawal	375,828		375,828	375,828
Multiple Use Management Classification	200	-	200	200
Oil Shale Withdrawal	2,428,808	-	2,428,808	2,428,808
Phosphate Withdrawal	14,787		14,787	14,787
Public Water Reserves	21,368	-	21,368	21,368
Stock Driveways	37,111	-	37,111	37,111
Retained:				
BLM Rock Springs Administrative Site	14	14	14	14
14-Mile Recreation Site	20	20	20	20
Natural Corrals Archeological Site	357	357	357	357
Oregon Trail/Parting of the Ways	520	520		520
Pine Springs Archeological Site	90	90	90	90
Public Water Reserves	4,240	4,240	4,240	4,240
Sugarloaf Petroglyphs	5	5	5	5
White Mountain Petroglyphs	20	20	20	20
Classification Withdrawal	-	1,080,600	-	-
Coal Withdrawal	-	375,828	-	-
Multiple Use Management Classification	-	200	-	-
Oil Shale Withdrawal	-	2,428,808	-	-
Phosphate Withdrawal	-	14,787	-	-
Public Water Reserves	-	25,608	-	-
Stock Driveways	-	37,111	-	-

Note: Approximately 500,000 acres of withdrawals overlap.

TABLE 2-7

ACCESS NEEDS

Road/Area Identification	Road Names	Location	Land Ownership	Benefitting Resource					
				Minerals	Range	Wildlife	Forestry	Recreation	Lands
1	Pine Creek	secs. 19-20, 22, 27, 30, T. 29 N., R. 101 W.	Private		X	X		X	X
2	Prospect Mountain	sec. 23, T. 27 N., R. 104 W. sec. 8, T. 28 N., R. 104 W.	Private		X	X		X	X
3	Little Colorado	sec. 36, T. 27 N., R. 109 W.	State		X	X		X	X
4	Bush Rim	sec. 36, T. 24 N., R. 102 W.	State		X	X		X	X
5	Natural Corrals	sec. 19, T. 21 N., R. 101 W. sec. 13, T. 21 N., R. 102 W.	Private						
6	Cedar Canyon Petroglyphs	secs. 1, 13, 15, 19, 21, 23, T. 22 N., R. 104 W. secs. 7, 17, 19, 21, T. 22 N., R. 103 W.	Private	X	X	X		X	X
7	White Mountain Petroglyphs	sec. 19, T. 22 N., R. 104 W. sec. 13, T. 22 N., R. 105 W.	Private	X	X	X		X	X
8	Fort LaClede/ Dug Springs	secs. 19, 21, 25, 27, T. 17 N., R. 98 W. secs. 13, 21, 23, 29 T. 17 N., R. 97 W. secs. 13, 19, 21, 23, T. 17 N., R. 96 W. sec. 19, T. 17 N., R. 95 W.	Private	X	X	X		X	X
9	Canyon Creek	secs. 17-18, T. 12 N., R. 101 W. secs. 13, 22, T. 12 N., R. 102 W.	Private		X	X		X	X
10	Currant Creek	sec. 35, T. 15 N., R. 107 W. secs. 1-2, T. 14 N., R. 107 W. secs. 4-6, 8-10, T. 14 N., R. 106 W.	Private	X	X	X		X	X
11	Hickey Mountain	secs. 21-23, T. 12 N., R. 114 W. sec. 24, T. 13 N., R. 114 W	Private	X		X	X	X	X

TABLE 2-8

AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL

(approximate acres)[1]

PROPOSED PLAN

Category	Surface Ownership (Federal Acres)	Hydrocarbon Potential (Federal Surface and Subsurface Acres) High	Moderate	Low	Total
No Leasing					
Greater Red Creek ACEC (Red Creek Drainage)	55,880	20,810	12,230	26,430	59,470
Wind River Front (Eastern Portion)	88,510	0	0	92,990	92,990
Total No Leasing	**144,390**	**20,810**	**12,230**	**119,420**	**152,460**
No Surface Occupancy (NSO)[2]					
14-Mile Recreation Area	20	20	0	0	20
Big Sandy River and 1/4 mile buffer (1.5 miles)	240	0	0	240	240
Boars Tusk	90	90	0	0	90
Cedar Canyon, LaBarge, Sugarloaf, Tolar, and White Mountain Petroglyphs + 1/2 mile vista	1,600	770	480	350	1,600
Crookston Ranch	40	40	0	0	40
Cottonwood Canyon	160	0	160	0	160
Currant Creek Drainage	23,740	0	2,820	21,200	24,020
Dry Sandy Swales	20	0	0	20	20
Emmons Cone	60	60	0	0	60
Greater Sand Dunes ACEC (developed recreation sites and ORV parking lot)	50	50	0	0	50
LaClede and Dug Springs Stage Stations	20	20	0	0	20
Native American Burials	2	2	0	0	2
Natural Corrals ACEC	1,115	1,270	0	0	1,270
North and South Table Mountains	1,280	1,280	0	0	1,280
Oregon Buttes ACEC	3,450	0	0	3,450	3,450
Pilot Butte	120	0	0	120	120
Pine Butte	320	320	0	0	320
Pine Springs ACEC	90	0	0	90	90
Pine Springs ACEC and Expansion Area	6,030	0	0	6,030	6,030
Prehistoric Quarry	160	0	0	160	160
Raptor nesting (occupied nests, cliffs, bluffs, roosts, outcrops and pinnacles)	835	600	120	125	845
South Pass Historic Landscape (area visible within 1-mile buffer of Lander Cutoff and area visible within 3-mile buffer of Oregon Trail)	33,700	0	760	34,630	35,390
Special status plant species habitat[3]	3,610	2,600	100	920	3,620
Sweetwater River and 1/4 mile buffer (Wild & Scenic part, 5.8 miles)	1,860	0	0	1,860	1,860
Tri-Territory Marker	10	10	0	0	10
Wild horse herd viewing area + 1/2 mile buffer	500	0	500	0	500
Total No Surface Occupancy	**79,120**	**7,130**	**4,938**	**69,193**	**81,261**
Seasonal Restrictions[2]					
Crucial Antelope Winter Range	817,640	268,740	335,370	241,780	845,890
Crucial Deer Winter Range	676,830	330,630	74,590	300,690	705,910
Crucial Elk Winter Range	345,590	182,870	40,280	128,000	351,150
Crucial Moose Winter Range	33,270	8,770	6,500	23,080	38,350
Elk Calving Areas	85,830	55,610	6,130	26,330	88,070
Game Fish Spawning Areas (miles)	210	30	80	140	250

TABLE 2-8 (Continued)

AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL

(approximate acres)[1]

PROPOSED PLAN

Category	Surface Ownership (Federal Acres)	Hydrocarbon Potential (Federal Surface and Subsurface Acres) High	Moderate	Low	Total
Moose Parturition Areas	410	0	0	410	410
Mule Deer Parturition Areas	40,880	21,690	0	19,010	40,700
Raptor Habitat	361,330	263,780	47,750	57,480	369,010
Sage Grouse Nesting Areas (1 3/4 mile from lek)	447,170	110,740	218,770	131,840	461,350
Total Seasonal Restrictions[4]	**1,954,560**	**934,400**	**483,870**	**622,190**	**2,040,460**
Controlled Surface Use Restrictions[2]					
Continental Divide Snowmobile Trail (1/4 mile buffer)	2,330	0	0	2,330	2,330
Floodplains, wetlands, and riparian areas (within 500' of 100-year floodplains and waters)[5]	153,320	33,370	65,700	58,250	157,320
Highly erodible soils	158,110	62,390	34,390	63,100	159,880
Historic Trails (1/4 mile or visual horizon)[6]	64,910	34,430	25,400	23,740	83,570
Monument Valley	69,940	69,940	0	0	69,940
Pine Mountain and Sugarloaf Basin	150,080	64,400	60	88,040	152,500
Recreation sites + 1/4 mile buffer	930	330	130	470	930
Riparian Areas	8,730	2,780	1,718	4,940	9,438
Sage Creek Watershed	52,270	6,660	32,450	13,850	52,960
Sage Grouse Leks and 1/4 mile buffer	8,170	1,420	4,410	2,660	8,490
Slopes greater than 25%	188,090	84,440	29,730	83,700	197,870
South Pass Historic Landscape (area not visible within 1-mile buffer of Lander Cutoff and area not visible within 3-mile buffer of Oregon Trail)	20,080	0	460	20,640	21,100
Special status plant species potential habitat[7]	39,870	7,090	16,890	19,690	43,670
Steamboat Mountain Crucial Overlap[8]	27,000	27,000	0	0	27,000
Superior Recharge (modified)[9]	7,120	8,180	0	0	8,180
View from Fontenelle Reservoir	120	220	0	0	220
VRM Class II Lands	681,560	278,300	66,200	387,140	731,640
Within 100' of inner gorge of intermittent/ephemeral streams	7,170	4,130	920	2,500	7,550
Within 1/4 mile of Sweetwater River (Recreational part, 3.4 miles)	1,090	0	0	1,090	1,090
Total Controlled Surface Use Restrictions[4]	**1,189,340**	**541,320**	**180,250**	**533,850**	**1,255,420**
Special Management					
Steamboat Mountain Proposed ACEC[8]	43,270	44,190	0	0	44,190
Greater Sand Dunes ACEC[10]	70,850	58,600	13,190	0	71,790
Rock Springs-Green River Expansion area[11]	26,600	13,860	6,570	10,510	30,940
Wind River Front (Western Portion)[12]	172,630	0	29,350	143,390	172,740
Total Special Management	**313,350**	**116,650**	**49,110**	**153,900**	**319,660**

[1]Lease parcels are designed on aliquot parts. The actual acreage for the lease may vary.

[2] Refer to Appendix 2 (Wyoming BLM Standard Mitigation Guidelines). These requirements apply to all surface disturbing activities.

[3] This refers to the populations of those plants proposed for ACEC designation. As new populations are identified, their locations would be added to this total.

[4] The numbers do not total because areas of restriction overlap. Where they do overlap, the area of overlap is only counted once.

TABLE 2-8 (Continued)

AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL

(approximate acres)[1]

PROPOSED PLAN

[5] Surface disturbing activities that could adversely affect water quality, and wetland and riparian habitat would avoid the area within 500 feet of or on 100-year floodplains, wetlands, or perennial streams. The 100-year floodplains, wetlands, and riparian areas would be closed to any new permanent facilities. Activities could be allowed if a site specific analysis determines that no adverse impacts would occur.

[6] All activity would conform with requirements of Class II visual values.

[7] This includes the actual plant sites and potential habitat. Acres will change as floristic inventories identify actual areas with potential. Searches would be required prior to surface disturbance activities.

[8] All activity in this area would require a plan of development prior to initiation. Leasing activity decisions will be designed to place priority on the elk habitat consideration. Conditions of Approval could be added to authorizations if needed to ensure objectives for the area are met and protect the elk herd. In the remainder of the crucial winter range and parturition areas outside the ACEC, only progressive development of one or two areas could occur simultaneously. Satisfactory abandonment and reclamation of an area or field would be required prior to development of additional areas.

[9] The Ericson Formation recharge area, for the town of Superior sole source aquifer and overlying formations, would be protected through the use of mitigation.

[10] The number of producing or temporarily shut-in pads would be limited. The undeveloped portion to the east (approximately 8,800 acres) would be leased with a No Surface Occupancy restriction. Construction within 1 mile or the visual horizon of the ACEC would consider alternatives to reduce objectionable visible profile from the ACEC. This acreage figure includes the 1-mile visual horizon.

[11] Leasing would allow for consultation with local communities, and provide direction to protect public health and safety.

[12] Surface disturbing activities would be limited through controlled surface use requirements or closing areas where maximum resource protection is necessary.

TABLE 2-9

SEASONAL RESTRICTIONS FOR ALL SURFACE DISTURBANCE ACTIVITIES

Affected Areas	Restriction	Restricted Area
Big Game Crucial Winter Ranges	Nov. 15 - April 30	Antelope, elk, moose, and mule deer crucial winter ranges
Parturition Areas	May 1 - June 30	Designated parturition areas
Sage Grouse Leks and Nesting Areas	Feb. 1 - July 31	Up to 2-mile radius of lek
Golden Eagle Nest	Feb. 1 - July 31	Within one-half mile radius
Osprey Nest	Feb. 1 - July 31	Within one-half mile radius
Swainson's Hawk Nest	Feb. 1 - July 31	Within one-half mile radius
Ferruginous Hawk Nest	Feb. 1 - July 31	Within one mile radius
Coopers Hawk Nest	Feb. 1 - July 31	Within one-half mile radius
Burrowing Owl Nest	Feb. 1 - July 31	Within one-half mile radius
Merlin Nest	Feb. 1 - July 31	Within one-half mile radius
Other Raptors	Feb. 1 - July 31	Within one-half mile radius
Game Fish Spawning Areas	Spring spawning Fall spawning	Determined on case-by-case basis.

TABLE 2-10

AREAS CLOSED TO COAL EXPLORATION AND SODIUM PROSPECTING

(by alternative)

	Proposed Plan	Alternative A	Alternative B	Alternative C
14-Mile Recreation Area	20	20	20	20
Big Sandy River (1/4 mile buffer)	0	0	240	240
Big Sandy River (500' buffer)	0	100	0	0
Boars Tusk	90	90	90	90
Cities and Towns (1-mile radius)	0	0	0	20,740
Concentrated Population Areas	0	12,130	0	0
Crookston Ranch	40	0	40	0
Crookston Ranch (1/2 mile buffer)	0	500	0	500
Currant Creek Drainage	23,740	23,740	0	23,740
Dry Sandy Swales	20	20	20	20
Emmons Cone	60	60	60	60
Floodplains (including Salt Wells Creek/Bitter Creek)	95,550	0	0	95,550
Salt Wells and Bitter Creek Floodplains	0	0	2,135	0
Green River City Limits	0	4,500	4,500	0
Historic Mining Town of Gibraltar	0	0	0	30
Historic Mining Town of Gunn	0	0	0	10
Historic Mining Town of Hallville	0	0	0	250
Interstate Highway 80	558	0	558	558
Incorporated Cities and Towns	3,770	3,770	3,770	3,770
LaClede and Dug Springs Stage Stations	20	20	20	0
LaClede and Dug Springs Stage Stations (1/2 mile buffer)	0	0	0	760
Monument Valley (steep slopes and highly erosive soils)	0	0	0	4,400
Native American Burials	2	2	2	2
Natural Corrals ACEC	1,115	1,115	0	1,115
Natural Corrals ACEC (Section 18)	0	0	640	0
North and South Table Mountains	1,280	1,280	0	1,280
North Fork Vermillion Creek (440 acres)	440	0	440	440
Oregon Buttes ACEC	3,450	3,450	3,450	3,450
Overland Trail (portions on BLM-administered land)	0	0	0	1,280
Parting of the Ways	0	40	40	40

TABLE 2-10 (Continued)

AREAS CLOSED TO COAL EXPLORATION AND SODIUM PROSPECTING

(by alternative)

	Proposed Plan	Alternative A	Alternative B	Alternative C
Petroglyphs: Cedar Canyon Petroglyphs NRHP Site	0	20	20	0
Petroglyphs: Cedar Canyon ACEC	0	0	0	2,550
Petroglyphs: Cedar Canyon, LaBarge, Sugarloaf, Tolar, and White Mountain (1/2 mile vista)	1,600	0	0	0
Petroglyphs: LaBarge, Sugarloaf, and Tolar	0	60	60	0
Petroglyphs: LaBarge, Sugarloaf, and Tolar (1/2 mile vista)	0	0	0	760
Petroglyphs: Pine Canyon Petroglyphs	0	0	0	1,280
Petroglyphs: White Mountain Petroglyphs ACEC	0	20	20	0
Petroglyphs: White Mountain Petroglyphs ACEC (1/2 mile vista)	0	0	0	480
Pilot Butte	120	120	120	120
Pine Butte	320	320	0	320
Pine Springs ACEC and Expansion	6,120	0	0	6,120
Pine Springs ACEC	0	90	90	0
Prehistoric Quarry	160	160	160	160
Raptor Nesting	835	835	835	835
Red Creek ACEC	55,880	0	0	55,880
Rock Springs-Green River Expansion Area	26,600	0	0	26,600
Rock Springs Expansion Area	0	15,740	0	0
Sage Grouse Leks (1/4 mile buffer)	8,170	8,170	0	8,170
Sand Dunes ACEC (Outside WSA)	0	14,150	0	0
Sand Dunes ACEC	0	0	0	38,650
South Pass Historic Landscape	33,700	0	0	53,780
Special Status Plant Species Sites	3,610	3,610	3,610	3,610
Steamboat Mountain Area	43,270	0	0	43,270
Superior Recharge	1,864	3,660	1,864	3,660
Sweetwater River (1/4 mile buffer)	1,460	0	1,460	1,460
Sweetwater River (500' buffer)	0	550	0	0
Tri-Territory Marker	10	0	0	10
Unacceptable	0	9,000	0	0

TABLE 2-10 (Continued)

AREAS CLOSED TO COAL EXPLORATION AND SODIUM PROSPECTING

(by alternative)

	Proposed Plan	Alternative A	Alternative B	Alternative C
Unsuitable	0	28,600	0	0
Union Pacific Railroad	509	0	509	509
Wild Horse Herd Viewing Area (1/2 mile buffer)	500	0	0	0
Wild Horse Herd Viewing Area	0	2	0	0
Wild Horse Herd Viewing Area (1/2 mile radius)	0	0	500	0
Wild Horse Herd Viewing Area (2-mile radius)	0	0	0	8,040
Wilderness Study Areas	172,000	172,000	172,000	172,000

TABLE 2-11

SUMMARY DESCRIPTION OF COAL SCREENING PROCESS RESULTS AND COAL MANAGEMENT ACTIONS

(Proposed Plan)

COAL SCREENING PROCESS RESULTS	FEDERAL COAL LANDS (acres)
Total Federal Coal Development Potential Area	475,700
Leased Federal Coal Lands (not evaluated)	(30,200)
Federal Coal Lands Unsuitable for (closed to) Leasing Consideration	(12,600)
Federal Coal Lands Unacceptable for (closed to) Leasing Consideration	(10,410)
COAL MANAGEMENT ACTIONS	
Remaining Federal Coal Lands Acceptable for Leasing Consideration	422,490
Portion Subject to No Surface Occupancy Restriction	13,340
Portion potentially subject to a No Surface Occupancy on Raptor Habitat	112,920
Portion Subject to No Surface Mining Restriction and Limited Surface Facilities Restriction	13,042

TABLE 2-12

AREAS CLOSED TO MINERAL MATERIAL SALES

(acres)

Area	Proposed Plan	Alternative A	Alternative B	Alternative C
14-Mile	20	20	20	20
Big Sandy and 1/4 mile Buffer	480	0	0	480
Boars Tusk	90	90	90	90
Cedar Canyon ACEC	360	20	20	2,550
Cottonwood Canyon	160	0	0	0
Crookston Ranch	40	500	40	500
Currant Creek Drainage	23,740	0	0	23,740
Dry Sandy Swales	20	20	0	20
Dug Springs Stage Station	10	10	10	10
Emmons Cone	60	60	60	60
LaClede Stage Station	10	10	10	10
Native American Burial Sites	2	2	2	2
Natural Corrals ACEC	1,115	1,115	640	1,115
North and South Table Mountains	1,280	1,280	0	1,280
Occupied Raptor Nests	835	835	835	835
Oregon Buttes ACEC	3,450	3,450	3,450	3,450

TABLE 2-12 (Continued)

AREAS CLOSED TO MINERAL MATERIAL SALES

(acres)

Area	Proposed Plan	Alternative A	Alternative B	Alternative C
Parting-of-the-Ways	40	0	0	0
Pilot Butte	120	120	120	120
Pine Butte	320	320	0	320
Pine Springs ACEC & Proposed Expansion Area	6,030	90	90	6,030
Prehistoric Quarry Site	160	160	160	160
Red Creek ACEC	55,880	0	0	55,880
Rock Art Sites	1,600	100	100	11,000
Sand Dunes ACEC	41,640	41,640	25,250	41,640
South Pass Historic Landscape Proposed ACEC	5,260	0	0	5,260
South Pass Historic Landscape (in the Vista and outside the 5,260 above)	53,780	0	0	87,580
Special Status Plant Species Sites	3,610	3,610	3,610	3,610
Special Status Plant Species Potential Habitat	0	0	0	39,870
Steamboat Mountain Proposed ACEC	43,270	0	0	43,270
Sweetwater River and 1/4 Mile Buffer	1,460	0	1,460	1,460
Wild Horse Viewing	500	2	500	8,040
TOTAL ACRES	**245,342**	**53,454**	**36,467**	**338,402**

NOTE: Surface collecting (picking materials off the ground by hand) would be considered in these areas on a case-by-case basis.

TABLE 2-13

AREAS PROPOSED FOR CLOSURE TO GEOPHYSICAL VEHICLES & EXPLOSIVE CHARGES

(acres)

	Proposed Plan	Alternative A	Alternative B	Alternative C
14-Mile Recreation Area	20	0	0	20
Boars Tusk	500	0	0	500
Special Status Plant Species Locations	3,610	3,610	3,610	3,610
Cedar Canyon Petroglyphs	515	20	20	515
Crookston Ranch	40	0	0	40
Dry Sandy Swales (1 mile)	20	20	20	20
Dug Springs Stage Station	10	0	0	10
LaBarge Bluffs Petroglyphs	20	0	0	20
LaClede Stage Station	10	0	0	10
Native American Burial Sites	2	2	2	2
Natural Corrals	20	20	20	20
Oregon Trail/Parting of the Ways	40	0	0	40
Pine Springs ACEC	90	90	90	90
Prehistoric Quarry Site	160	160	160	160
Sugarloaf Petroglyphs	20	0	0	20
Tolar Petroglyphs	20	0	0	20
White Mountain Petroglyphs	20	0	0	20
Wilderness Study Areas (excluding Adobe Town)	172,000	5,700	172,000	172,000
TOTAL	**177,117**	**9,622**	**175,922**	**177,117**

TABLE 2-14

ORV DESIGNATIONS

(Proposed Plan)

AREA	DESIGNATION	APPROXIMATE ACRES	SEASON/DATES OF RESTRICTION AND REASON FOR RESTRICTION
Adobe Town-Haystacks	Limited to designated roads & trails	54,000	To protect fragile and highly erodible soils.
Big Game Winter Ranges	Limited through seasonal closures (11/15 - 4/30 as needed)	1,500,000	To reduce stress to wintering animals. Closure to over-the-snow vehicles would be evaluated on a case-by-case basis in conjunction with the Wyoming Game & Fish Department.
Cedar Canyon ACEC	Limited to designated roads and trails	2,550	Limited to protect wildlife and cultural values (including over-the-snow vehicles).
Crookston Ranch	Closed	40	To protect historic site.
Deer Parturition Areas	Limited through seasonal closures (May 1 to June 30 as needed)	40,880	To reduce stress to deer.
Dry Sandy Swales	Closed	20	Area closed to protect integrity of setting and soils.
Dug Springs Stage Station	Limited to designated roads and trails	10	Limited to protect historic values.
Elk Calving Areas	Limited through seasonal closures (to be decided by biologist - May 1 to June 30 as needed)	85,830	To reduce stress to elk.
General GRRA	Limited to existing roads and trails	2,436,595	To reduce resource damage.
Greater Red Creek Proposed ACEC	Closed	8,020	Area closed to protect watershed values.
	Limited to designated roads and trails (includes Currant Creek, Sage Creek, and remainder of Red Creek)	123,870	To protect watershed values. Transportation planning would be done to protect resource values.
Greater Sand Dunes ACEC (Eastern Portion)	Open	10,500	Area designated open on active sand dunes to allow the recreating public a place to play in the sand dunes.
	Limited to existing roads and trails	5,810	Limited to protect resource values.
Closed		90	Closed around Boars Tusk to protect geologic values.
Green River City Limits	Limited to designated roads and trails within a 2-mile radius around the city limits	4,500	To reduce impacts from ORV freeplay.

TABLE 2-14 (Continued)

ORV DESIGNATIONS

(Proposed Plan)

AREA	DESIGNATION	APPROXIMATE ACRES	SEASON/DATES OF RESTRICTION AND REASON FOR RESTRICTION
LaBarge Bluffs Petroglyphs	Closed	20	Area closed to protect cultural values.
	Limited to designated roads and trails	100	Limited to protect cultural values.
LaClede Stage Station	Limited to designated roads and trails	10	Limited to protect historic values.
Monument Valley	Limited to designated roads and trails	69,940	To protect paleontological and watershed values. A transportation road plan would be prepared.
Moose Calving Areas	Limited through seasonal closures (to be decided by biologist - May 1 to June 30 as needed)	410	To reduce stress to moose.
Natural Corrals ACEC	Closed	20	NRHP site and the trail 1/2 mile to the spring are closed to protect wildlife and cultural values.
Limited to designated road and trails	1,300		Limited to protect resource values.
North & South Table Mountains	Limited to designated roads and trails	1,280	Limited to protect cultural and wildlife values.
Oregon Buttes ACEC	Closed	3,450	All of the ACEC is closed to vehicle traffic to protect adjacent WSA values.
Parting of the Ways	Limited to designated roads and trails	40	Limited to protect historical values.
Pine Mountain	Limited to designated roads and trails	64,200	To protect watershed values. Transportation planning would be done to protect resource values.
Pine Springs ACEC	Closed	90	Closed yearlong within fences including over-the-snow vehicles to protect cultural values.
Pine Springs Expansion Area	Closed	5,300	Closed yearlong - including over-the-snow vehicles to protect cultural and prehistoric values.
	Limited to existing roads and trails	730	Limited to protect resource values.
Prehistoric Quarry Site	Closed	160	Area closed to protect cultural values.
Raptor Nesting Areas	Limited through seasonal closures (2/1 through 7/31)	835	To protect nesting raptors.
Red Desert	Limited to designated roads and trails	245,480	Limited to protect scenic resource values.

TABLE 2-14 (Continued)

ORV DESIGNATIONS

(Proposed Plan)

AREA	DESIGNATION	APPROXIMATE ACRES	SEASON/DATES OF RESTRICTION AND REASON FOR RESTRICTION
Riparian Areas	Limited to existing roads and trails	8,730	To protect riparian and watershed values. During muddy conditions vehicle travel will be limited to existing roads and trails to protect soil and watershed values.
Sage Creek Mountain	Limited to existing roads and trails	1,300	Limited to protect cultural values and T&E plants.
South Pass	Limited to designated roads and trails	33,700	Limited to protect cultural resource values.
Special Status Plant Species	Closed	3,610	Closed yearlong to protect plant populations. (Does not apply to over-the-snow vehicles.)
Steamboat Mountain Proposed ACEC	Limited to designated roads and trails. Seasonal closures to be determined.	43,270	To protect wildlife values.
Steep Slopes of White Mountain	Limited to designated roads and trails	68,640	To protect watershed and visual values.
Sugarloaf Basin	Limited to designated roads and trails	85,880	To protect watershed values. Transportation planning would be done to protect resource values.
Sugarloaf Petroglyphs	Closed	20	Area closed to protect cultural values.
	Limited to designated roads and trails	350	Limited to protect cultural values.
Tolar Petroglyphs	Closed	20	Area closed to protect cultural values.
	Limited to designated roads and trails	310	Limited within 1/2 mile radius to protect cultural values.
White Mountain Petroglyphs ACEC	Closed	20	Closed to maintain integrity of setting and protect cultural values. Vehicle travel limited to parking area. All other acreage is closed to vehicle travel.
	Limited to designated roads and trails	480	Limited within 1/2 mile radius.
Wilderness Study Areas	Closed	172,160	To protect naturalness, solitude, and opportunities for unconfined recreation.
Wind River Front Special Recreation Management Area	Limited to designated roads and trails	260,580	To protect the Class I airshed, scenic, watershed, and wildlife values, recreation use, and riparian and vegetation resources.

NOTE: WSAs in the resource area (excluding Adobe Town) are closed to non-motorized mechanical transport, as well as motorized transport.

TABLE 2-15

PROPOSED VRM CLASSES BY ALTERNATIVE

(approximate acres administered by BLM)

VRM Class	Proposed Plan	Alternative A	Alternative B	Alternative C
Class I	0	0	0	0
Class II	681,560	423,000	390,000	500,000
Class III	632,370	330,000	215,000	328,000
Class IV	2,251,810	2,858,000	3,006,000	2,783,000
Rehabilitation Areas[1]	24,160	24,160	24,160	24,160

[1] By definition, rehabilitation is necessary to bring these areas up to one of the four other classes.

TABLE 2-16

WILD HORSE POPULATIONS AND APPROPRIATE MANAGEMENT LEVELS[1]

(PROPOSED PLAN & ALTERNATIVE C)

Area	AML	Current Population	Excess Horses	Estimated Post-1994 Foaling Population[2]	Estimated Summer 1994 Excess Horses	Excess Horses to be Removed
Great Divide Basin WHHMA	415-600	486	0	583	83	0-168
White Mountain WHHMA	205-300	268	18	322	72	22-117
Salt Wells Creek WHHMA	251-365	497	132	596	231	231-345
Little Colorado Area[3]	69-100	143	43	113.4	13	13-44
Adobe Town[5]	165-235	257	22	308	73	73-143

[1] 1994 data. Cycle would repeat every two years.

[2] Estimated post-1994 foaling populations are based on a 20 percent increase.

[3] No appropriate management level (AML) has been established pending completion of the Green River Resource Management Plan. Wild horse numbers would be allowed to range from 69 to 100 head, in conformance with the 1981 District Court order.

[4] Reflects gathering of horses in March 1994 from this area.

[5] Only Rock Springs District portion.

TABLE 2-17

ALLOTMENTS FOR THE PROPOSED LITTLE COLORADO AREA

Allotment Number	Allotment Name	Public Land Acres
13017	Eighteen Mile	228,840
13022	Lombard	21,112
13023	Figure Four	114,425
13024	Big Sandy	59,140
13026	Boundary	29,995
13027	Sublette	66,029
Total Acres		**519,541**

TABLE 2-18

ESTIMATED POPULATION INCREASE BASED ON 3-YEAR GATHERING CYCLE

(PROPOSED PLAN AND ALTERNATIVE C)

Area	AML	Beginning Population	Year 1 Post-Season Foaling Population Increase[1]	Year 1 Population	Year 2 Post-Season Foaling Population Increase[1]	Year 2 Population	Year 3 Post-Season Foaling Population Increase[1]	Year 3 Population	Excess Wild Horses
Great Divide Basin WHHMA	415-600	415	50	465	56	521	62	583	0-168
White Mountain WHHMA	205-300	205	25	230	28	258	31	289	0-84
Salt Wells Creek WHHMA	251-365	251	30	281	34	315	38	353	0-102
Little Colorado Area	69-100	69	8	77	9	86	10	96	0-27
Adobe Town[2]	165-235	165	20	185	22	207	25	232	0-94

[1] Estimated post-season foaling populations are based on a 12 percent increase and implementation of a fertility program.

[2] Only Rock Springs District portion.

TABLE 2-19

BLM-ADMINISTERED SURFACE ACRES PROPOSED FOR SPECIAL MANAGEMENT DESIGNATIONS

By Alternative

SPECIAL DESIGNATION MANAGEMENT AREAS	PROPOSED PLAN	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
Cedar Canyon ACEC	2,550	2,550	2,550	2,550
Greater Red Creek Proposed ACEC	131,890	55,880	55,880	281,880[1]
Greater Sand Dunes ACEC	38,650	38,650	25,050	38,650
Natural Corrals ACEC	1,273	1,273	1,273	1,273
Oregon Buttes ACEC	3,450	3,450	3,450	3,450
Pine Springs ACEC	6,030	90	90	6,030
South Pass Historic Landscape Proposed ACEC	53,780	0	0	87,580
Special Status Plant Species Proposed ACEC	900	0	0	39,870
Steamboat Mountain Proposed ACEC	43,270	0	0	43,270
White Mountain Petroglyphs ACEC	20	20	20	20
OTHER MANAGEMENT AREAS				
Monument Valley Management Area	0	0	0	69,940
Pine Mountain Management Area[1]	0	0	0	64,200
Red Desert Watershed Management Area	0	0	0	0
Sugarloaf Basin Management Area[1]	0	0	0	85,880

[1] Under Alternative C, the Greater Red Creek ACEC comprises Currant Creek, Sage Creek, Red Creek, Pine Mountain, and Sugarloaf Basin.

TABLE 2-20

AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL

(approximate acres)[1]

ALTERNATIVE A

Category	Surface Ownership (Federal Acres)	Hydrocarbon Potential (Federal Surface and Subsurface Acres)			
		High	Moderate	Low	Total
No Leasing					
14-Mile Recreation Area	20	20	0	0	20
Rock Springs Expansion Area (old area)	15,740	16,050	1,130	0	17,180
Special Status Plant Species Localities[2]	3,610	2,600	100	920	3,620
Superior Recharge	3,660	4,020	0	0	4,020
Total No Leasing	**23,030**	**22,690**	**1,230**	**920**	**24,840**
No Surface Occupancy (NSO)[3]					
Big Sandy River and 500' buffer for new permanent facilities	100	0	0	100	100
Boars Tusk	90	90	0	0	90
Cedar Canyon Petroglyphs NRHP Site	20	20	0	0	20
Concentrated population areas +1 mile radius (Rock Springs & Green River)	12,130	8,320	1,640	4,900	14,860
Crookston Ranch + 1/2 mile buffer	500	580	0	0	580
Currant Creek Drainage	23,740	0	2,820	21,200	24,020
Dry Sandy Swales	20	0	0	20	20
Emmons Cone	60	60	0	0	60
Greater Sand Dunes ACEC[4]	14,150	14,380	70	0	14,450
LaBarge, Sugarloaf, and Tolar Petroglyphs	60	40	0	20	60
LaClede & Dug Springs Stage Stations	20	20	0	0	20
Native American Burials	2	2	0	0	2
Natural Corrals ACEC	1,115	1,270	0	0	1,270
North and South Table Mountains	1,280	1,280	0	0	1,280
Oregon Buttes ACEC	3,450	0	0	3,450	3,450
Pilot Butte	120	0	0	120	120
Pine Butte	320	320	0	0	320
Pine Springs ACEC	90	0	0	90	90
Prehistoric Quarry	160	0	0	160	160
Raptor nesting (occupied nests, cliffs, bluffs, roosts, outcrops, and pinnacles)	835	600	120	125	845
Sage Grouse Leks (1/4 mile buffer)	8,170	1,420	4,410	2,660	8,490
Special Status Plant Species Habitat[2]	3,610	2,600	100	920	3,620
Special Status Plant Species Potential Habitat[5]	39,870	7,090	16,890	19,690	43,670
Sweetwater River and 500' buffer for new permanent facilities	550	0	0	550	550
White Mountain Petroglyphs ACEC	20	0	20	0	20
Wild Horse Herd Viewing Area	2	0	2	0	2
Total No Surface Occupancy[6]	**110,481**	**38,089**	**26,069**	**54,002**	**118,166**
Seasonal Restrictions[3]					
Crucial Antelope Winter Range	817,640	268,740	335,370	241,780	845,890
Crucial Deer Winter Range	676,830	330,630	74,590	300,690	705,910
Crucial Elk Winter Range	345,590	182,870	40,280	128,000	351,150
Crucial Moose Winter Range	33,270	8,770	6,500	23,080	38,350
Elk Calving Areas	85,830	55,610	6,130	26,330	88,070
Game Fish Spawning Areas (miles)	210	30	80	140	250
High Value Lambing Area	760,080	298,940	300,010	216,350	815,300
Raptor Habitat	361,330	263,780	47,750	57,480	369,010

TABLE 2-20 (Continued)

AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL

(approximate acres)[1]

ALTERNATIVE A

Category	Surface Ownership (Federal Acres)	Hydrocarbon Potential (Federal Surface and Subsurface Acres)			
		High	Moderate	Low	Total
Sage Grouse Nesting Areas (within 1 3/4 miles)	447,170	110,770	218,770	131,840	461,380
Total Seasonal Restrictions[6]	**2,321,930**	**1,128,830**	**647,570**	**683,840**	**2,460,240**
Controlled Surface Use[3]					
Big Sandy River (within 500 feet)	100	0	0	100	100
Cedar Canyon ACEC slopes >12%	1,120	1,120	0	0	1,120
Continental Divide Snowmobile Trail (1/4 mile buffer)	2,330	0	0	2,330	2,330
Currant Creek Drainage	23,740	0	2,820	21,200	24,020
Game Fish Spawning Areas (miles)	210	30	80	140	250
Greater Sand Dunes ACEC & 1-mile buffer[7]	70,850	58,600	13,190	0	71,790
Historic Trails (1/4 mile buffer)[8]	64,910	34,430	25,400	23,740	83,570
Pine Springs Expansion	6,030	0	0	6,030	6,030
Recreation Sites	80	30	10	40	80
Red Creek ACEC	55,880	20,810	12,230	26,440	59,480
Riparian Areas	8,730	2,780	1,710	4,940	9,430
Sage Creek Watershed	52,270	6,660	32,450	13,850	52,960
Slopes greater than 25%	188,090	84,440	29,730	83,700	197,870
South Pass Historic Landscape[7]	87,580	0	0	90,670	90,670
Sweetwater River (within 500 feet)	550	0	0	550	550
View from Fontenelle Reservoir	120	220	0	0	220
VRM Class II Lands	423,350	165,850	26,340	245,540	437,730
Within 100' of inner gorge of intermittent/ephemeral streams	7,170	4,130	920	2,500	7,550
Floodplains, wetlands, and riparian areas (within 500' of 100-year floodplains and waters)[9]	153,320	33,370	65,700	58,250	157,320
Total Controlled Surface Use Restrictions[6]	**944,210**	**439,830**	**148,550**	**423,250**	**1,011,630**
Special Management					
Greater Sand Dunes	38,650	34,290	4,710	0	39,000
Steamboat Mountain Area	43,270	44,190	0	0	44,190
Total Special Management	**81,920**	**78,480**	**4,710**	**0**	**83,190**

[1] Lease parcels are designed on aliquot parts. The actual acreage for the lease may vary.

[2] As new populations are identified, their locations would be added to this total.

[3] Refer to Appendix 2 (Wyoming BLM Standard Mitigation Guidelines).

[4] The number of producing or temporarily shut-in wells would not exceed 3 per section. In the undeveloped area, construction, development, and surface occupancy would be limited to stabilized dunes only.

[5] Searches would be required prior to surface disturbance activities.

[6] Areas of restriction may overlap. If they overlap, the area of overlap is only counted once.

[7] Construction within one mile or the visual horizon would consider alternatives such as relocating, visual screening, or any other methods available to reduce objectionable visible profile from the ACEC.

[8] All activity would conform with requirements of Class II visual values.

[9] Surface disturbing activities that could adversely affect water quality, and wetland and riparian habitat would avoid the area within 500 feet of or on 100-year floodplains, wetlands, or perennial streams. The 100-year floodplains, wetlands, and riparian areas would be closed to any new permanent facilities. Activities could be allowed if a site specific analysis determines that no adverse impacts would occur.

TABLE 2-21

AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL

(approximate acres)[1]

ALTERNATIVE B

	Surface Ownership	Hydrocarbon Potential (Federal Surface and Subsurface Acres)			
Category	**Federal Acres**	**High**	**Moderate**	**Low**	**Total**
No Leasing					
Sweetwater River (within 1/4 mile, Wild and Scenic part, 5.8 miles)	1,860	0	0	1,860	1,860
Total No Leasing	**1,860**	**0**	**0**	**1,860**	**1,860**
No Surface Occupancy (NSO)[2]					
14-Mile Recreation Area	20	20	0	0	20
Boars Tusk	90	90	0	0	90
Cedar Canyon Petroglyphs NRHP Site	20	20	0	0	20
Crookston Ranch	40	40	0	0	40
Emmons Cone	60	60	0	0	60
LaClede and Dug Springs Stage Stations	20	20	0	0	20
Native American Burials	2	2	0	0	2
Natural Corrals ACEC in Section 18	640	640	0	0	640
Oregon Buttes ACEC	3,450	0	0	3,450	3,450
Pilot Butte	120	0	0	120	120
Pine Springs ACEC	90	0	0	90	90
Prehistoric Quarry	160	0	0	160	160
Raptor nesting (occupied nests, cliffs, bluffs, outcrops, and pinnacles)	835	600	120	125	845
Special Status Plant Species Habitat[3]	3,610	2,600	100	920	3,620
White Mountain Petroglyphs ACEC	20	0	20	0	20
Wild horse herd viewing area + 1/2 mile radius	500	0	500	0	500
Total No Surface Occupancy[4]	**9,675**	**4,090**	**738**	**4,863**	**9,695**
Seasonal Restrictions[2]					
Raptor Habitat	361,330	263,780	47,750	57,480	369,010
Total Seasonal Restrictions	**361,330**	**263,780**	**47,750**	**57,480**	**369,010**
Controlled Surface Use[2]					
1-mile Radius of Cities and Towns (Rock Springs, Green River, Point of Rocks, Table Rock, Superior, McKinnon, Eden, and Farson[5]	20,740	14,270	7,570	12,260	34,100
Big Sandy River (within 1/4 mile)	240	0	0	240	240
Continental Divide Snowmobile Trail (1/4 mile buffer)	2,330	0	0	2,330	2,330
Currant Creek Drainage	23,740	0	2,820	21,200	24,020
Dry Sandy Swales	20	0	0	20	20
Ericson Formation Recharge Area to Superior[6]	1,860	1,860	0	0	1,860
Greater Sand Dunes ACEC and 1/2 mile buffer	55,490	47,890	8,340	0	56,230
Highly erodible soils	158,110	62,390	34,390	63,100	159,880
Historic Trails (1/4 mile buffer)[7]	64,910	34,430	25,400	23,740	83,570
LaBarge Bluffs, Sugarloaf, and Tolar Petroglyphs	60	40	0	20	60
Natural Corrals ACEC	1,115	1,270	0	0	1,270
North and South Table Mountains	1,280	1,280	0	0	1,280
Pine Springs Expansion	6,030	0	0	6,030	6,030
Recreation Sites (1/4 mile buffer)	930	330	130	470	930
Red Creek ACEC	55,880	20,810	12,230	26,430	59,470
Riparian Areas[8]	8,730	2,780	1,710	4,940	9,430

TABLE 2-21 (Continued)

AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL

(approximate acres)[1]

ALTERNATIVE B

Category	Surface Ownership	Hydrocarbon Potential (Federal Surface and Subsurface Acres)			
	Federal Acres	High	Moderate	Low	Total
Rock Springs-Green River Expansion Area[9]	26,600	13,860	6,570	10,510	30,940
Sage Creek Watershed	52,670	6,660	32,450	13,850	52,960
Slopes greater than 25%	188,090	84,440	29,730	83,700	197,870
Special Status Plant Species Potential Habitat[10]	39,870	7,090	16,890	19,690	43,670
Sweetwater River (within 1/4 mile, Recreational part, 3.4 miles)	1,090	0	0	1,090	1,090
View from Fontenelle Reservoir	120	220	0	0	220
VRM Class II Lands	389,840	131,340	26,340	245,540	403,220
Floodplains, wetlands, and riparian areas (within 500' of 100-year floodplains and waters)[8]	153,320	33,370	65,700	58,250	157,320
Within 100' of inner gorge of intermittent/ephemeral streams	7,170	4,130	920	2,500	7,550
Total Controlled Surface Use Restrictions[4]	**1,050,420**	**485,170**	**176,830**	**461,620**	**1,123,620**

[1] Lease parcels are designed on aliquot parts. The actual acreage for the lease may vary.

[2] Refer to Appendix 2 (Wyoming BLM Standard Mitigation Guidelines).

[3] As new populations are identified, their locations would be added to this total.

[4] Areas of restriction may overlap. If they overlap, the area of overlap is only counted once.

[5] Mitigation would be used to provide for public health and safety.

[6] The town of Superior's sole source aquifer would be protected through the use of mitigation.

[7] All activity would conform with requirements of Class II visual values.

[8] Surface disturbing activities that could adversely affect water quality, and wetland and riparian habitat would avoid the area on 100-year floodplains, wetlands, or perennial streams. The 100-year floodplains, wetlands, and riparian areas would be closed to any new permanent facilities. Activities could be allowed if a site specific analysis determines that no adverse impacts would occur.

[9] Leasing would be with mitigation to protect public health and safety based upon consultation with local communities.

[10] Searches would be required prior to surface disturbance activities.

TABLE 2-22

AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL

(approximate acres)[1]

ALTERNATIVE C

Category	Surface Ownership (Federal Acres)	Hydrocarbon Potential (Federal Surface and Subsurface Acres)			
		High	Moderate	Low	Total
No Leasing					
14-Mile Recreation Area	20	20	0	0	20
Big Sandy River (within 1/4 mile)	240	0	0	240	240
Currant Creek Drainage	23,740	0	2,820	21,200	24,020
LaClede & Dug Springs Stage Stations & Pine Springs ACEC	110	20	90	0	110
Red Creek ACEC	55,880	20,810	12,230	26,440	59,480

TABLE 2-22 (Continued)

AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL

(approximate acres)[1]

ALTERNATIVE C

Category	Surface Ownership (Federal Acres)	Hydrocarbon Potential (Federal Surface and Subsurface Acres)			
		High	Moderate	Low	Total
Rock Springs-Green River Expansion Area (new area)	26,600	13,860	6,570	10,510	30,940
Special Status Plant Species Habitat[2]	3,610	2,600	100	920	3,620
Steamboat Mountain Proposed ACEC[3]	43,270	44,190	0	0	44,190
Superior Recharge Area (Ericson)	3,660	4,020	0	0	4,020
Sweetwater River (within 1/4 mile, Wild & Scenic part, 5.8 miles)	1,860	0	0	1,860	1,860
Total No Leasing	**158,990**	**85,520**	**21,810**	**61,170**	**168,500**
No Surface Occupancy (NSO)[4]					
1-mile Radius of Cities & Towns (Rock Springs, Green River, McKinnon, Superior, Point of Rocks, Farson, Table Rock, Eden)	20,740	14,270	7,570	12,260	34,100
14-Mile Recreation Area	20	20	0	0	20
Boars Tusk	90	90	0	0	90
Cedar Canyon Petroglyphs NRHP Site + 1/2 mile buffer	500	500	0	0	500
Crookston Ranch (1/2 mile buffer)	500	580	0	0	580
Currant Creek Drainage	23,740	0	2,820	21,200	24,020
Dry Sandy Swales	20	0	0	20	20
Emmons Cone	60	60	0	0	60
LaBarge, Sugarloaf, and Tolar Petroglyphs	760	410	0	350	760
LaClede & Dug Springs Stage Stations + 1/2 mile buffer	760	1,000	0	0	1,000
Natural Corrals ACEC	1,115	1,270	0	0	1,270
North and South Table Mountains	1,280	1,280	0	0	1,280
Oregon Buttes ACEC	3,450	0	0	3,450	3,450
Pilot Butte	120	0	0	120	120
Pine Butte	320	320	0	0	320
Pine Springs ACEC and Expansion	6,120	0	0	6,120	6,120
Prehistoric Quarry	160	0	0	160	160
Raptor nesting (occupied nests, cliffs, bluffs, outcrops, pinnacles)	835	600	120	125	845
Floodplains, wetlands, and riparian areas (within 500' of 100-year floodplains and waters)[5]	153,320	33,370	65,700	58,250	157,320
Sage Grouse Leks (1/4 mile buffer)	8,170	1,420	4,410	2,660	8,490
South Pass Historic Landscape	87,580	0	0	90,670	90,670
Special Status Plant Species Potential Habitat[6]	39,870	7,090	16,890	19,690	43,670
Steep slopes (20%) and highly erosive soils in Monument Valley	4,400	4,400	0	0	4,400
Tri-Territory Marker	10	10	0	0	10
White Mountain Petroglyphs ACEC + 1/2 mile buffer	480	0	480	0	480
Wild horse herd viewing area + 2-mile radius	8,040	480	4,990	2,570	13,550
Total No Surface Occupancy[7]	**605,600**	**249,080**	**107,020**	**276,670**	**632,770**
Seasonal Restrictions[4]					
Crucial Antelope Winter Range	817,640	268,740	335,370	241,780	445,890
Crucial Deer Winter Range	676,830	330,660	74,590	300,690	705,940
Crucial Elk Winter Range	345,590	182,870	40,280	128,000	351,150

TABLE 2-22 (Continued)

AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL

(approximate acres)[1]

ALTERNATIVE C

Category	Surface Ownership (Federal Acres)	Hydrocarbon Potential (Federal Surface and Subsurface Acres)			
		High	Moderate	Low	Total
Crucial Moose Winter Range	33,270	8,770	6,500	23,080	38,350
Elk Calving Areas	85,830	55,610	6,130	26,330	88,070
Game Fish Spawning Areas (miles)	210	30	80	140	250
High Value Lambing Areas	760,080	298,940	300,010	216,350	815,300
Moose Parturition Areas	410	0	0	410	410
Mule Deer Parturition Areas	40,880	21,690	0	19,010	40,700
Raptor Habitat	361,330	263,780	47,750	57,480	369,010
Sage Grouse Nesting Areas (within 1 3/4 miles)	447,170	110,770	218,770	131,840	461,380
Total Seasonal Restrictions[7]	**2,330,830**	**1,128,810**	**645,350**	**694,630**	**2,468,790**
Controlled Surface Use[4]					
Almond Formation Recharge to Superior Aquifer[8]	4,710	4,710	0	0	4,710
Big Sandy River (within 1/4 mile)	240	0	0	240	240
Cedar Canyon ACEC slopes >12%	1,120	1,120	0	0	1,120
Continental Divide Snowmobile Trail (1/4 mile buffer)	2,330	0	0	2,330	2,330
Currant Creek Drainage	23,740	0	2,820	21,200	28,730
Game Fish Spawning Area (miles)	210	30	80	140	250
Greater Sand Dunes ACEC and 1-mile buffer[9]	70,850	58,600	13,190	0	71,790
Highly erodible soils	158,110	62,390	34,390	63,100	159,880
Historic Trails (1/2 mile buffer)	195,360	82,440	59,410	59,120	200,970
Major Highway Corridors (28, 191, 530, 430, I-80)[10]	10,930	3,520	4,940	3,090	11,550
Monument Valley[11]	69,940	69,940	0	0	69,940
Pine Mountain and Sugarloaf Basin	150,080	64,400	60	88,040	152,500
Recreation Sites & 1/4 mile buffer	930	330	130	470	930
Riparian Areas	8,730	2,780	1,710	4,940	9,430
Sage Creek Watershed	52,270	6,660	32,450	13,850	52,960
Slopes greater than 25%	188,090	84,440	29,730	83,700	197,870
Steamboat Mountain Crucial Overlap[3]	27,000	27,000	0	0	27,000
Sweetwater River (within 1/4 mile, Recreational part, 3.4 miles)	1,090	0	0	1,090	1,090
View from Fontenelle Reservoir	120	220	0	0	220
VRM Class II Lands	500,130	186,280	26,340	302,630	515,250
White Mountain Petroglyphs and 1/2 mile buffer	480	0	480	0	480
Within 100' of inner gorge of intermittent/ephemeral streams	7,170	4,130	920	2,500	7,550
Total Controlled Surface Use Restrictions[7]	**1,104,200**	**525,490**	**161,640**	**481,090**	**1,168,220**

[1] Lease parcels are designed on aliquot parts. The actual acreage for the lease may vary.

[2] As new populations are identified, their locations would be added to this total.

[3] Existing leases held by production would be honored and would be allowed to continue operation under existing lease stipulations. Conditions of Approval could be added to these stipulations to protect the elk herd. In the remainder of the crucial winter range and parturition areas outside the ACEC, only progressive development of one or two areas could occur simultaneously. Satisfactory abandonment and reclamation of an area or field would be required prior to development of additional areas.

TABLE 2-22 (Continued)

AREAS OF OIL AND GAS LEASE RESTRICTIONS BY HYDROCARBON POTENTIAL

(approximate acres)[1]

ALTERNATIVE C

Category	Surface Ownership (Federal Acres)	Hydrocarbon Potential (Federal Surface and Subsurface Acres)			
		High	Moderate	Low	Total

[4] Refer to Appendix 2 (Wyoming BLM Standard Mitigation Guidelines).

[5] Surface disturbing activities that could adversely affect water quality, and wetland and riparian habitat would avoid the area within 500 feet of or on 100-year floodplains, wetlands, or perennial streams. The 100-year floodplains, wetlands, and riparian areas would be closed to any new permanent facilities. Activities could be allowed if a site specific analysis determines that no adverse impacts would occur.

[6] Searches would be required prior to surface disturbance activities.

[7] Areas of restriction may overlap. If they overlap, the area of overlap is only counted once.

[8] Protection would be through use of mitigation.

[9] Construction within one mile or the visual horizon, would consider alternatives like relocating visual screening, or any other methods available to reduce objectionable visible profile from the ACEC.

[10] Manage for Class II visual resources.

[11] Surface disturbance would be allowed from February 1 to July 31 with an approved plan to mitigate impacts. A 1/4 to 1/2 mile buffer around badlands would be used to protect watershed.

TABLE 2-23

SUMMARY DESCRIPTION OF COAL SCREENING PROCESS RESULTS AND COAL MANAGEMENT ACTIONS

(Alternative A)

COAL SCREENING PROCESS	FEDERAL COAL LANDS	
	SURFACE	SUBSURFACE
Total Coal Potential Area Evaluated	700,300	98,200
Leased Federal Coal Lands (not evaluated)	(30,200)	(30,200)
Federal Coal Lands Unsuitable for (Closed To) Leasing Consideration	14,400	5,900
Federal Coal Lands Unacceptable for (Closed To) Leasing Consideration	3,200	5,800
COAL MANAGEMENT ACTIONS		
Remaining Federal Coal Lands Acceptable for Further Leasing Consideration	52,700	56,300
Portion Acceptable Pending Studies	1,900	7,000

TABLE 2-24

SUMMARY DESCRIPTION OF COAL SCREENING PROCESS RESULTS AND COAL MANAGEMENT ACTIONS

(Alternative B)

COAL SCREENING PROCESS RESULTS	FEDERAL COAL LANDS (acres)
Total Federal Coal Development Potential Area	475,700
Leased Federal Coal Lands (not evaluated)	(30,200)
Federal Coal Lands Unsuitable for (closed to) Leasing Consideration	(12,600)
COAL MANAGEMENT ACTIONS	
Remaining Federal Coal Lands Acceptable for Leasing Consideration	432,900
Portion Subject to No Surface Occupancy Restriction	39,232
Portion Potentially Subject to a No Surface Occupancy on Raptor Habitat	112,920
Portion Subject to No Surface Mining and Limited Surface Facilities Restriction	3,810

TABLE 2-25

SUMMARY DESCRIPTION OF COAL SCREENING PROCESS RESULTS AND COAL MANAGEMENT ACTIONS

(Alternative C)

COAL SCREENING PROCESS RESULTS	FEDERAL COAL LANDS (acres)
Total Federal Coal Development Potential Area	475,700
Leased Federal Coal Lands (not evaluated)	(30,200)
Federal Coal Lands Unsuitable for (closed to) Leasing Consideration	(12,600)
Federal Coal Lands Unacceptable for (closed to) Leasing Consideration	(416,000)
COAL MANAGEMENT ACTIONS	
Remaining Federal Coal Lands Acceptable for Leasing Consideration	16,900
Portion Subject to No Surface Occupancy Restriction	0
Portion Potentially Subject to a No Surface Occupancy on Raptor Habitat	112,920
Portion Subject to No Surface Mining Restriction	0

TABLE 2-26

ORV DESIGNATIONS

(Alternative A)

AREA	DESIGNATION	APPROXIMATE ACRES	SEASON/DATES OF RESTRICTION AND REASON FOR RESTRICTION
Adobe Town-Haystacks	Limited to designated roads & trails	54,000	To protect fragile and highly erodible soils.
Alkali Basin-East Sand Dunes WSA	Limited to existing roads & trails	12,800	To maintain wilderness integrity.
Alkali Draw WSA	Limited to existing roads & trails	16,990	To maintain wilderness integrity.
Buffalo Hump WSA	Limited to existing roads & trails	10,300	To maintain wilderness integrity.
Cedar Canyon ACEC	Limited to existing roads & trails	2,550	To protect wintering big game and raptor nesting. Area closed from December 15 to July 1.
General GRRA	Limited to existing roads & trails	2,926,746	To reduce resource damage.
Greater Sand Dunes ACEC	Open	11,964	Area designated open to allow recreating public a place to play in the sand dunes.
Green River City Limits	Closed	4,500	Hillsides and steep slopes within 2-mile radius around the city limits are closed to vehicles including snowmobiles in cooperation with the Green River City ordinance to prevent impacts from ORVs.
Honeycomb Buttes WSA	Limited to designated roads & trails	41,620	To maintain wilderness integrity.
Lands Surrounding Flaming Gorge	Limited to designated roads & trails	219,460	To protect sensitive fisheries, watershed values, reduce soil erosion and protect setting of the area.
Natural Corrals ACEC	Limited to existing roads & trails	1,115	To protect cultural, geologic, and recreation values.
Oregon Buttes WSA	Closed	5,700	To maintain wilderness integrity.
Red Creek ACEC	Limited to designated roads & trails	55,880	To protect watershed values.
Red Lake WSA	Limited to existing roads & trails	9,515	To maintain wilderness integrity.
Sand Dunes WSA	Limited to designated roads & trails	27,200	To maintain wilderness integrity. This area includes a portion of the Greater Sand Dunes ACEC.
South Pinnacles WSA	Limited to existing roads & trails	10,828	To maintain wilderness integrity.
Steamboat Mountain	Limited to existing roads & trails	15,981	To protect elk calving and deer fawning area. Closed March 1 to July 1.
Twin Buttes-Devils Playground WSA	Limited to designated roads & trails	23,841	To protect fragile and highly susceptible erosionable soil.

ABLE 2-26 (Continued)

ORV DESIGNATIONS

(Alternative A)

AREA	DESIGNATION	APPROXIMATE ACRES	SEASON/DATES OF RESTRICTION AND REASON FOR RESTRICTION
Whitehorse Creek WSA	Limited to existing roads & trails	4,028	To maintain wilderness integrity.
White Mountain	Limited to designated roads & trails	4,953	To alleviate current overuse problems.
White Mountain Petroglyphs	Closed	20	To maintain integrity of setting and reduce theft and vandalism.
Wind River Front (Eastern Portion)	Limited to existing roads & trails only, except where designated. Closed (seasonally or year round).	88,510	To protect important wildlife habitat, and provide a systematic approach for transportation (elimination of parallel roads).

NOTE: WSAs in the resource area (excluding Adobe Town) are closed to non-motorized mechanical transport, as well as motorized transport.

TABLE 2-27

ORV DESIGNATIONS

(Alternative B)

AREA	DESIGNATION	APPROXIMATE ACRES	SEASON/DATES OF RESTRICTION AND REASON FOR RESTRICTION
Cedar Canyon ACEC	Limited to existing roads and trails (no over-the-snow vehicles)	2,550	To protect wildlife and cultural values.
Crookston Ranch	Closed	40	Crookston Ranch portion of ACEC closed to protect historic site.
Currant Creek/Sage Creek	Limited to existing roads and trails, including over-the-snow vehicles	76,010	To protect sensitive fisheries and watershed values.
Dry Sandy Swales	Closed	20	To protect integrity of setting and soils.
Dug Springs Station	Limited to designated roads and trails	10	To protect historic values.
General GRRA	Limited to existing roads and trails	3,073,502	To reduce resource damage.
Greater Sand Dunes (Eastern Portion)	Open	5,500	Area designated open on active sand dunes to allow recreating public a place to play in the sand dunes.
	Limited to existing roads and trails	6,000	To protect resource values.
	Closed	5,000	To enhance development activity and protect public health and safety.
Green River City Limits	Closed	4,500	Hillsides and steep slopes within a 2-mile radius around the city limits are closed (including snowmobiles) in cooperation with the Green River City ordinance to prevent impacts from ORVs.
LaBarge Bluffs Petroglyphs	Closed	20	To protect cultural values.
LaClede Stage Station	Limited to designated roads and trails	10	To protect historic values.
Monument Valley Area	Limited to existing roads and trails	69,940	To protect wildlife habitat and fragile soils.
Natural Corrals ACEC	Closed	20	The NRHP site and the trail 1/2 mile to the spring is closed to protect wildlife and cultural values.
	Limited to designated roads and trails	1,300	To protect wildlife and cultural values except for 15 acres of the NRHP site and the trail 1/2 mile to the spring which are closed.

TABLE 2-27 (Continued)

ORV DESIGNATIONS

(Alternative B)

AREA	DESIGNATION	APPROXIMATE ACRES	SEASON/DATES OF RESTRICTION AND REASON FOR RESTRICTION
North & South Table Mountains	Limited to existing roads and trails	1,280	To protect cultural and wildlife values.
Oregon Buttes ACEC	Closed	3,450	Closed to protect ACEC values.
Parting of the Ways	Closed	40	To protect historical values.
Pine Springs ACEC	Limited to existing road and trails	90	To protect cultural and prehistoric values.
Pine Spring Expansion Area	Closed - including over- the snow vehicles	5,300	To protect cultural and prehistoric values.
	Limited to existing roads and trails	730	To protect cultural and prehistoric values.
Prehistoric Quarry Site	Closed	160	To protect cultural values.
Raptor Nesting Areas	Limited through seasonal closures (Feb. 1 - July 31)	835	To protect nesting raptors.
Red Creek ACEC	Closed	8,020	To protect watershed values.
	Limited to existing roads and trails	47,860	To protect watershed values.
Riparian Areas	Limited to existing roads and trails	8,730	To protect riparian and watershed values.
Sage Creek Mountain	Limited to existing roads and trails	1,280	To protect cultural values and T&E plants.
South Pass	Closed	41,400	To protect cultural and scenic values.
	Limited to existing roads and trails	46,180	To protect cultural values.
Special Status Plant Species	Closed (does not apply to over-the-snow vehicles)	3,610	To protect plant populations.
Steep Slopes of White Mountain	Limited to existing roads and trails	68,640	To protect watershed and visual values.
Sugarloaf Petroglyphs	Closed	20	To protect cultural values.
Tolar Petroglyphs	Closed	20	To protect cultural values.
White Mountain Petroglyphs ACEC	Limited to existing roads and trails	20	To maintain integrity of setting and reduce theft and vandalism.
Wilderness Study Areas	Closed	172,160	To protect naturalness, solitude, and opportunities for unconfined recreation.

NOTE: WSAs in the resource area (excluding Adobe Town) are closed to non-motorized mechanical transport, as well as motorized transport.

TABLE 2-28

ORV DESIGNATIONS

(Alternative C)

AREA	DESIGNATION	APPROXIMATE ACRES	SEASON/DATES OF RESTRICTION AND REASON FOR RESTRICTION
Big Game Winter Ranges	Limited through seasonal closures (Nov. 15 - April 30 as needed)	1,500,000	To reduce stress to wintering animals.
Cedar Canyon ACEC	Closed	500	Closed within 1/2 mile of petroglyphs to protect cultural values.
	Limited to existing roads and trails (no over-the-snow vehicles)	2,050	To protect wildlife and cultural values.
Crookston Ranch	Closed	40	To protect historic site.
Currant Creek/Sage Creek/Pine Mountain/ Sugarloaf Basin areas	Limited to designated road and trails (including to over-the-snow vehicles)	281,880	To protect sensitive fisheries and watershed values.
Deer Parturition Areas	Limited through seasonal closures (May 1 - June 30 as needed)	40,880	To reduce stress to deer.
Dry Sandy Swales	Closed	20	To protect integrity of setting and soils.
Dug Springs Station	Limited to designated trails	10	To protect historic values.
Elk Calving Areas	Limited through seasonal closures to be decided by biologist (May 1 - June 30 as needed)	85,830	To reduce stress to elk.
General GRRA	Limited to existing roads and trails	2,883,285	To reduce resource damage.
Greater Red Creek ACEC (Red Creek area)		Closed	8,020 To protect watershed values.
Greater Sand Dunes ACEC	Open	10,500	Area designated open to allow recreating public a place to play in the sand dunes.
	Limited to existing roads and trails	5,810	To protect ACEC values.
	Closed	90	Road closed around Boars Tusk to protect geologic values.
Green River City Limits	Closed	4,500	Hillsides and steep slopes within a 2-mile radius around the city limits are closed (including snowmobiles) to prevent impacts from ORVs on the surrounding hillsides.
LaBarge Bluffs Petroglyphs	Closed	20	To protect cultural values.
LaClede Stage Station	Limited to designated trails	10	To protect historic values.
Monument Valley Area	Limited to designated roads	69,940	To protect wildlife habitat and fragile soils.
Moose Calving Areas	Limited through seasonal closures to be		

TABLE 2-28 (Continued)

ORV DESIGNATIONS

(Alternative C)

AREA	DESIGNATION	APPROXIMATE ACRES	SEASON/DATES OF RESTRICTION AND REASON FOR RESTRICTION
Natural Corrals ACEC	Closed	20	NRHP site and the trail 1/2 mile to the spring which are closed to protect wildlife and cultural values.
	Limited to existing roads and trails	1,300	To protect wildlife and cultural values.
North & South Table Mountains	Limited to existing roads and trails	1,280	To protect cultural and wildlife values.
Oregon Buttes ACEC	Closed	3,450	To protect ACEC values.
Parting of the Ways	Closed	40	To protect historical values.
Pine Springs ACEC	Closed	90	Closed yearlong within fences including over-the-snow vehicles to protect cultural and prehistoric values.
	Limited to existing road	90	To protect cultural and prehistoric values.
Pine Springs Expansion Area	Closed yearlong - including over-the-snow vehicles	6,030	To protect cultural and prehistoric values.
Prehistoric Quarry Site	Closed	160	To protect cultural values.
Raptor Nesting Areas	Limited through seasonal closures (Feb. 1 - July 31)	835	To protect nesting raptors.
Riparian Areas	Limited to existing roads and trails	8,730	To protect riparian and watershed values.
Sage Creek Mountain	Limited to existing roads and trails	1,300	To protect cultural values.
South Pass	Closed	41,400	To protect cultural values and scenic values.
	Limited to designated roads and trails	46,180	To protect cultural values.
Special Status Plant Species	Closed yearlong (does not apply to over-the- snow vehicles)	39,870	To protect plant populations.
Steamboat Mountain	Limited through seasonal closures	43,270	To protect wildlife values.
Steep Slopes of White Mountain	Limited to designated roads and trails	68,640	To protect watershed and visual values.
Sugarloaf Petroglyphs	Closed	20	To protect cultural values.
Tolar Petroglyphs	Closed	20	To protect cultural values.
White Mountain Petroglyphs ACEC	Closed	20	All acres in ACEC closed to maintain integrity of setting and reduce theft and vandalism.
Wilderness Study Areas	Closed	172,160	To protect naturalness, solitude, and oppor tunities for unconfined recreation.

NOTE: WSAs in the resource area (excluding Adobe Town) are closed to non-motorized mechanical transport, as well as motorized transport.

TABLE 2-29

WILD HORSE POPULATIONS AND APPROPRIATE MANAGEMENT LEVELS[1]

(ALTERNATIVES A AND B)

Area	AML	Current Population	Excess Horses	Estimated Post-1992 Foaling Population[2]	Estimated Summer 1992 Excess Horses	Excess Horses to be Removed
Great Divide Basin WHHMA	415-600	475	0	571	71	0-62
White Mountain WHHMA	205-300	273	23	328	78	28-123
Salt Wells Creek WHHMA	251-365	623	258	747	382	382-496
Little Colorado Area	0	120	120	144	144	0
Adobe Town[3]	165-235	297	62	357	122	122-192
Firehole Area	0	16	16	19	19	16-19
North Baxter/ Jack Morrow	0	72	72	86	86	72-86
Pinedale RA	0	10	10	12	12	10-12

[1] 1992 data. Cycle would repeat every two years.

[2] Estimated post-1992 foaling populations are based on a 20 percent increase.

[3] Only Rock Springs District portion.

TABLE 2-30

ESTIMATED POPULATION INCREASE BASED ON 3-YEAR GATHERING CYCLE

(ALTERNATIVES A AND B)

Area	AML	Beginning Population	Year 1 Post-Season Foaling Population Increase[1]	Year 1 Population	Year 2 Post-Season Foaling Population Increase[1]	Year 2 Population	Year 3 Post-Season Foaling Population Increase[1]	Year 3 Population	Excess Wild Horses
Great Divide Basin WHHMA	415-600	415	50	465	56	521	62	583	0-168
White Mountain WHHMA	205-300	205	25	230	28	258	31	289	0-84
Salt Wells Creek WHHMA	251-365	251	30	281	34	315	38	353	0-102
Little Colorado Area	0	120	14	134	16	150	18	168	0-168
Adobe Town[2]	165-235	165	20	185	22	207	25	232	0-94

[1] Estimated post-season foaling populations are based on a 12 percent increase and implementation of a fertility program.

[2] Only Rock Springs District portion.

TABLE 2-31

LIVESTOCK FORAGE/AUM LOSSES

(PROPOSED PLAN)

Activity	Existing Disturbed Acres	Projected Disturbed Acres	Total Disturbed Acres	Net Reclaimed Acres	Disturbed Acres	AUMs Lost
Lands Actions						
Disposal	2,783	13,043	15,826	NA	15,826	1,319
Authorizations (ROWs, permits, leases)	8,325[1]	10,538	18,863	7,000	11,863	989
Wild Horse						
Trap sites	62	30	92	0	92	8
Water development	0	15	15	0	15	1
Range Improvements						
Wells, pits, reservoirs	810	77	887	0	887	74
Wildlife						
Guzzlers	10	0	10	0	10	<1
Exclosures	930	970	1,900	0	1,900	160
Mineral						
Oil and gas	10,435	13,875	24,310	14,325	9,985	832
Gravel pits	1,080[2]	—	1,080	—	1,080	90
Coalbed methane	140	3,010	3,150	1,927	1,223	102
Coal (6 mines)	13,918	13,640	27,558	17,940	9,618	802
Mine Sites (trona, jade, zeolite, gold)	1,920	325	2,245	0	2,245	187
Sodium wells	5	0	5	0	5	<1
TOTAL	**40,418**	**55,523**	**95,941**	**41,192**	**54,749**	**4,565**

[1] Based on Resource Area estimates. Actual disturbance due to lands actions is not presently known (Haverly).

[2] Based on Resource Area estimates. Actual acreage of gravel pits is not known. It is assumed that the amount of disturbance will remain constant (i.e., new acres disturbed would be offset by acres reclaimed) (Porter).

TABLE 2-32

LIVESTOCK FORAGE/AUM LOSSES

(ALTERNATIVE A)

Activity	Existing Disturbed Acres	Projected Disturbed Acres	Total Disturbed Acres	Net Reclaimed Acres	Disturbed Acres	AUMs Lost
Lands Actions						
Disposal	2,783	9,123	11,906	NA	11,906	992
Authorizations (R/Ws, permits, leases)	8,325[1]	8,325	16,650	6,500	10,150	846
Wild Horse						
Trap sites	62	30	92	0	92	8
Water development	0	15	15	0	15	1
Range Improvements						
Wells, pits, reservoirs	810	77	887	0	887	74
Wildlife						
Guzzlers	10	0	10	0	10	4
Exclosures	930	970	1,900	0	1,900	160
Mineral						
Oil and gas	10,435	14,194	24,629	14,537	10,092	841
Gravel pits	1,080[2]	—	1,080	—	1,080	90
Coalbed methane	140	3,640	3,780	2,329	1,451	121
Coal (6 mines)	13,918	13,640	27,558	17,940	9,618	802
Mine Sites (trona, jade, zeolite, gold)	1,920	120	2,040	0	2,040	170
Sodium wells	5	0	5	0	5	<1
TOTAL	**40,418**	**50,134**	**90,552**	**41,306**	**49,246**	**4,109**

[1] Based on Resource Area estimates. Actual disturbance due to lands actions is not presently known (Haverly).

[2] Based on Resource Area estimates. Actual acreage of gravel pits is not known. It is estimated that the amount of disturbance will remain constant (i.e., new acres disturbed would be offset by acres reclaimed) (Porter).

TABLE 2-33

LIVESTOCK FORAGE/AUM LOSSES

(ALTERNATIVE B)

Activity	Existing Disturbed Acres	Projected Disturbed Acres	Total Disturbed Acres	Net Reclaimed Acres	Disturbed Acres	AUMs Lost
Lands Actions						
Disposal	2,783	13,043	15,826	NA	15,826	1,319
Authorizations (R/Ws, permits, leases)	8,325[1]	10,538	18,863	7,000	11,863	989
Wild Horse						
Trap sites	62	30	92	0	92	8
Water development	0	15	15	0	15	1
Range Improvements						
Wells, pits, reservoirs	810	77	887	0	887	74
Wildlife						
Guzzlers	10	0	10	0	10	4
Exclosures	930	0	930	0	930	78
Mineral						
Oil and gas	10,435	26,865	37,674	22,139	15,535	1,296
Gravel pits	1,080[2]	—	1,080	—	1,080	90
Coalbed methane	140	3,640	3,780	2,329	1,451	121
Coal (6 mines)	13,918	15,190	29,108	18,490	10,618	885
Mine Sites (trona, jade, zeolite, gold)	1,920	325	2,245	0	2,245	187
Sodium wells	5	0	5	0	5	<1
TOTAL	**40,418**	**69,723**	**110,515**	**49,958**	**60,557**	**5,052**

[1] Based on Resource Area estimates. Actual disturbance due to lands actions is not presently known (Haverly).

[2] Based on Resource Area estimates. Actual acreage of gravel pits is not known. It is estimated that the amount of disturbance will remain constant (i.e., new acres disturbed would be offset by acres reclaimed) (Porter).

TABLE 2-34

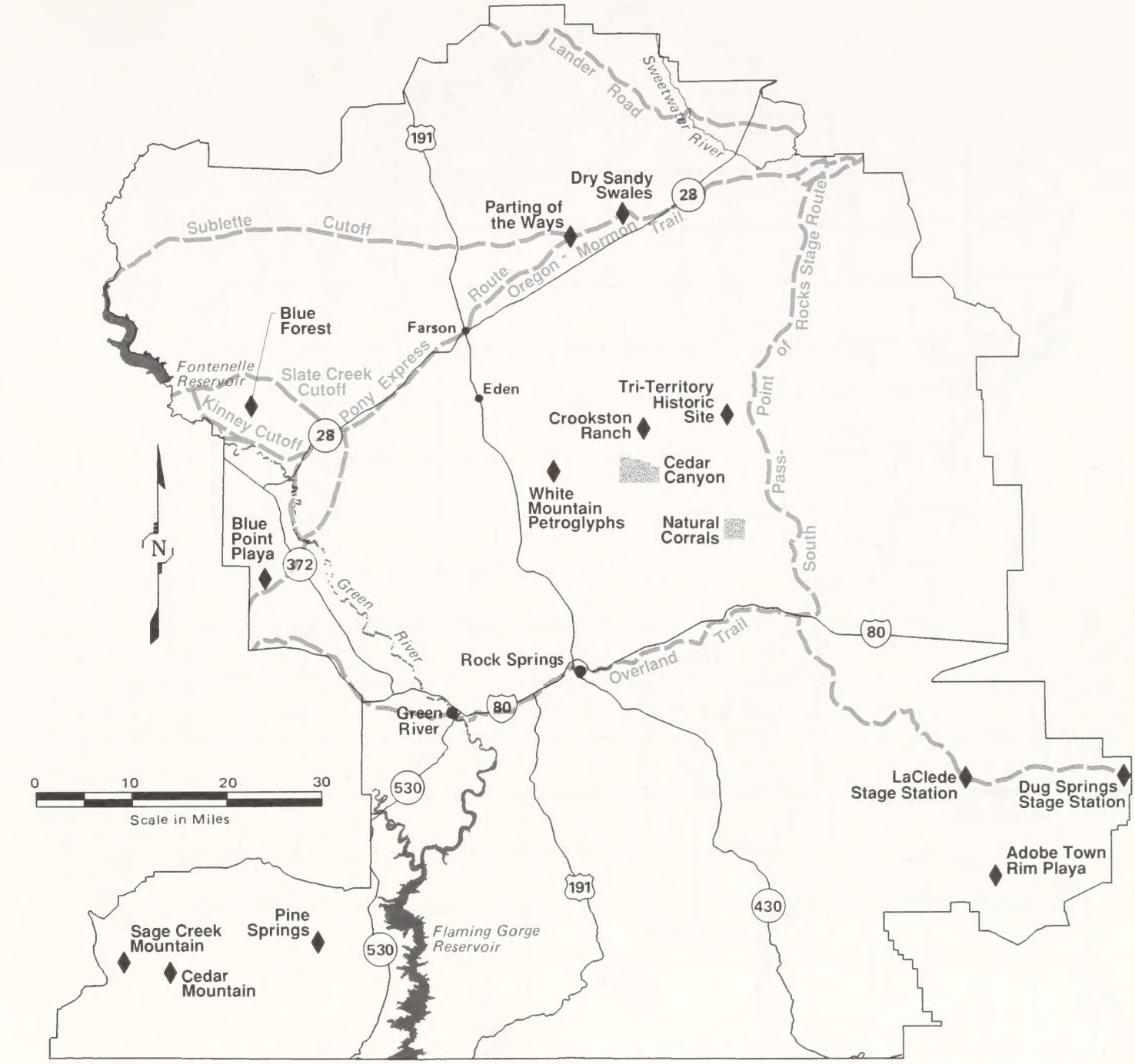
LIVESTOCK FORAGE/AUM LOSSES

(ALTERNATIVE C)

Activity	Existing Disturbed Acres	Projected Disturbed Acres	Total Disturbed Acres	Net Reclaimed Acres	Disturbed Acres	AUMs Lost
Lands Actions						
Disposal	2,783	13,043	15,826	NA	15,826	1,087
Authorizations (R/Ws, permits, leases)	8,325[1]	7,493	15,818	7,000	8,818	735
Wild Horse						
Trap sites	62	30	92	0	92	8
Water development	0	15	15	0	15	1
Range Improvements						
Wells, pits, reservoirs	810	77	887	0	887	74
Wildlife						
Guzzlers	10	0	10	0	10	4
Exclosures	930	970	1,900	0	1,900	160
Mineral						
Oil and gas	10,435	13,828	24,263	14,293	9,970	831
Gravel pits	1,080[2]	—	1,080	—	1,080	90
Coalbed methane	140	3,010	3,150	1,927	1,223	102
Coal (6 mines)	13,918	10,560	24,478	15,790	8,688	724
Mine Sites (trona, jade, zeolite, gold)	1,920	325	2,245	0	2,245	187
Sodium wells	5	0	5	0	5	<1
TOTAL	**40,418**	**49,351**	**89,769**	**39,010**	**50,759**	**4,003**

[1] Based on Resource Area estimates. Actual disturbance due to lands actions is not presently known (Haverly).

[2] Based on Resource Area estimates. Actual acreage of gravel pits is not known. It is estimated that the amount of disturbance will remain constant (i.e., new acres disturbed would be offset by acres reclaimed) (Porter).



Historic Trail

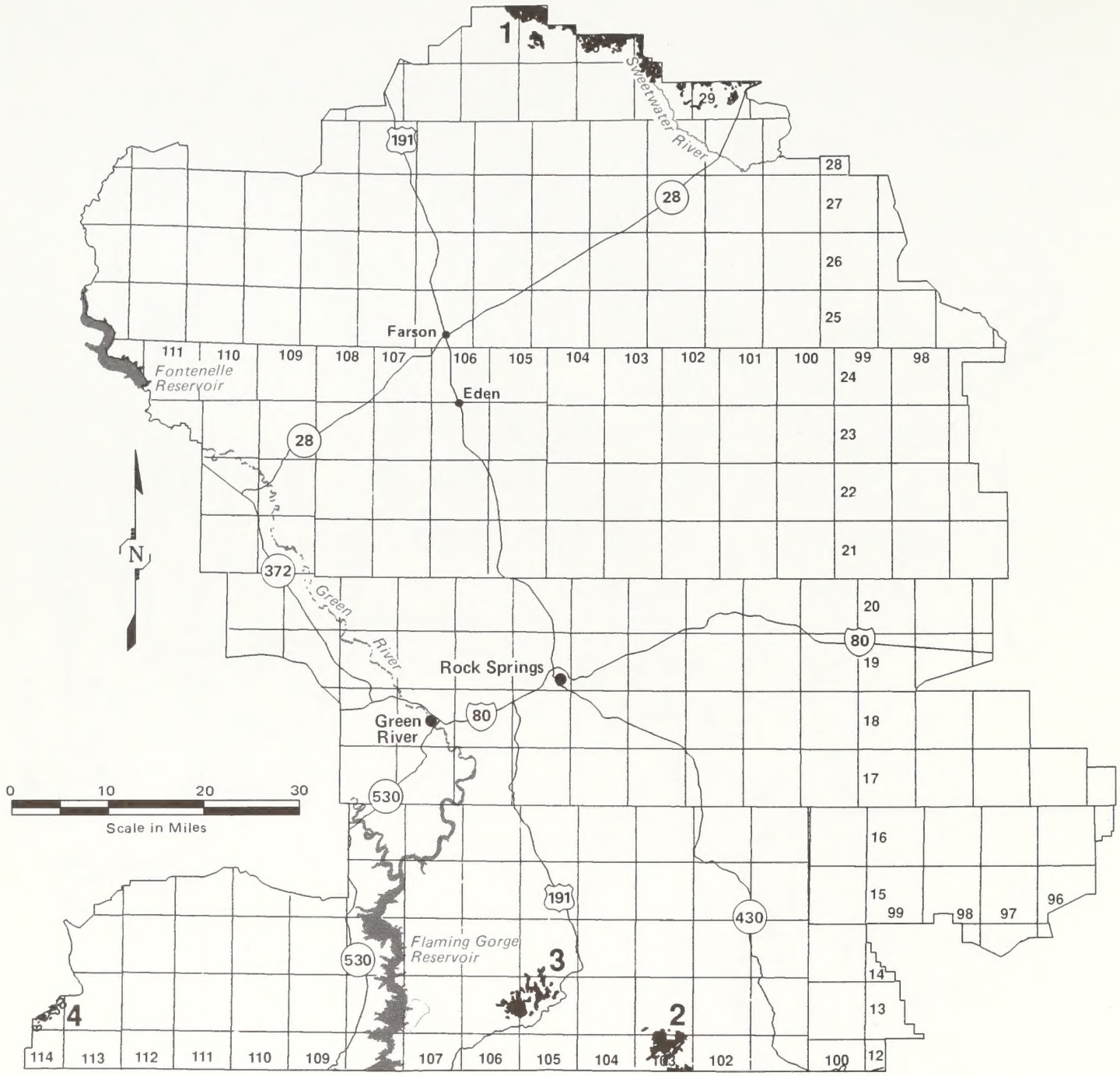
Historic or Cultural Site

Area Of Critical Environmental Concern

Map 5

Select Cultural Resource Sites and Historic Trails

Green River Planning Area



Timber Compartment

1 Wind River Front

2 Pine Mountain

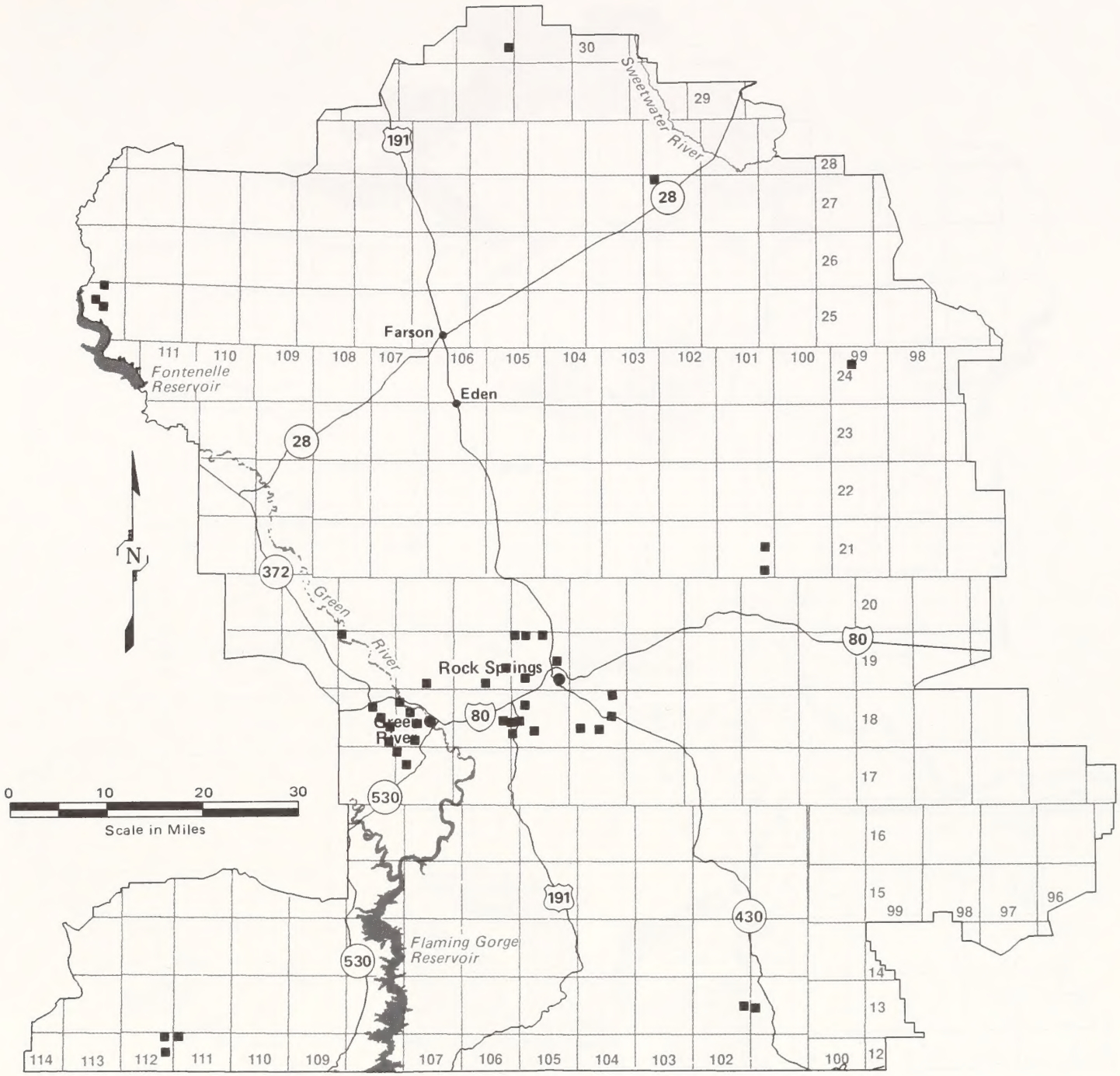
3 Little Mountain

4 Hickey-Table Mountain

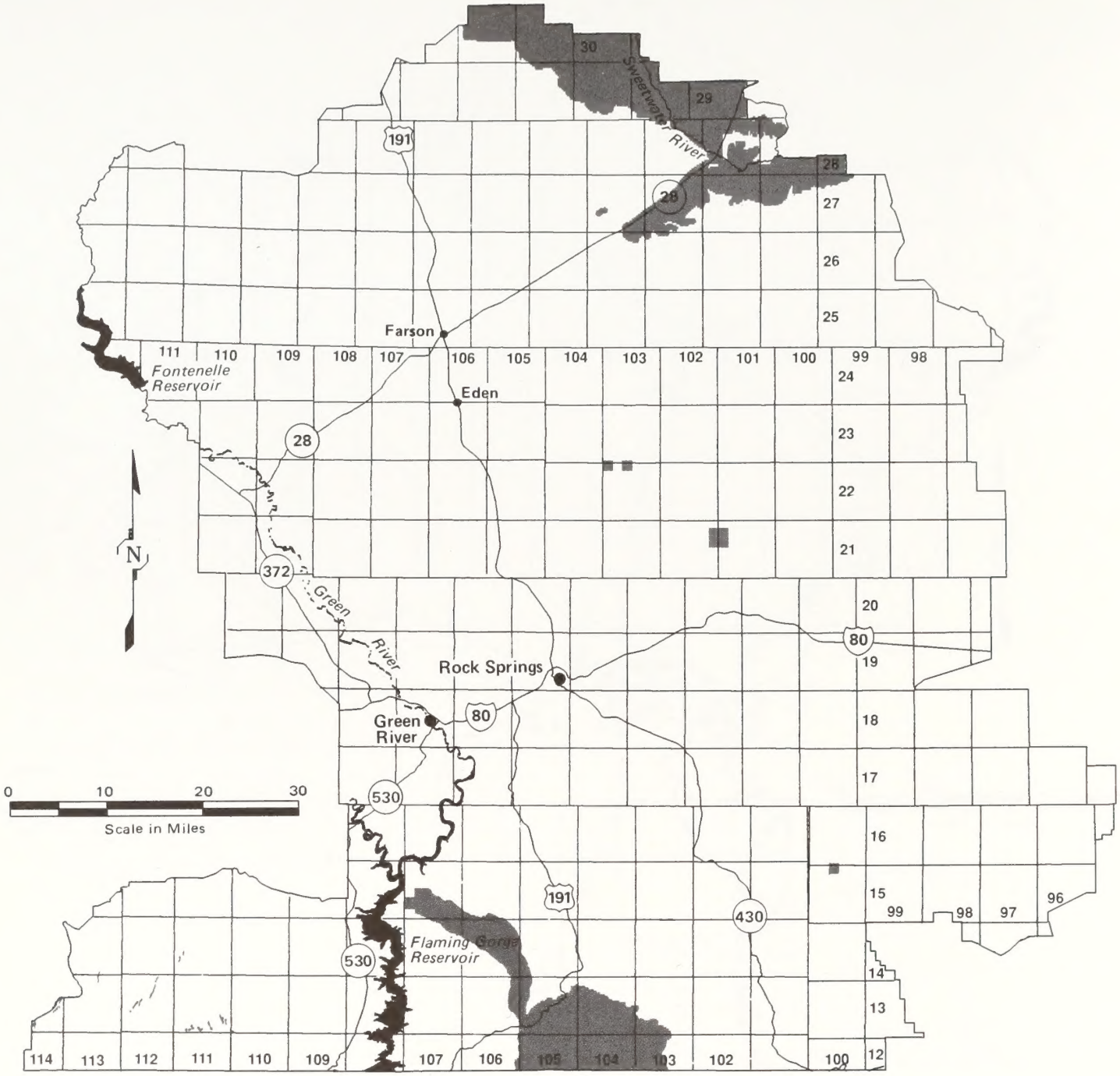
Map 6

Timber Compartments

Green River Planning Area

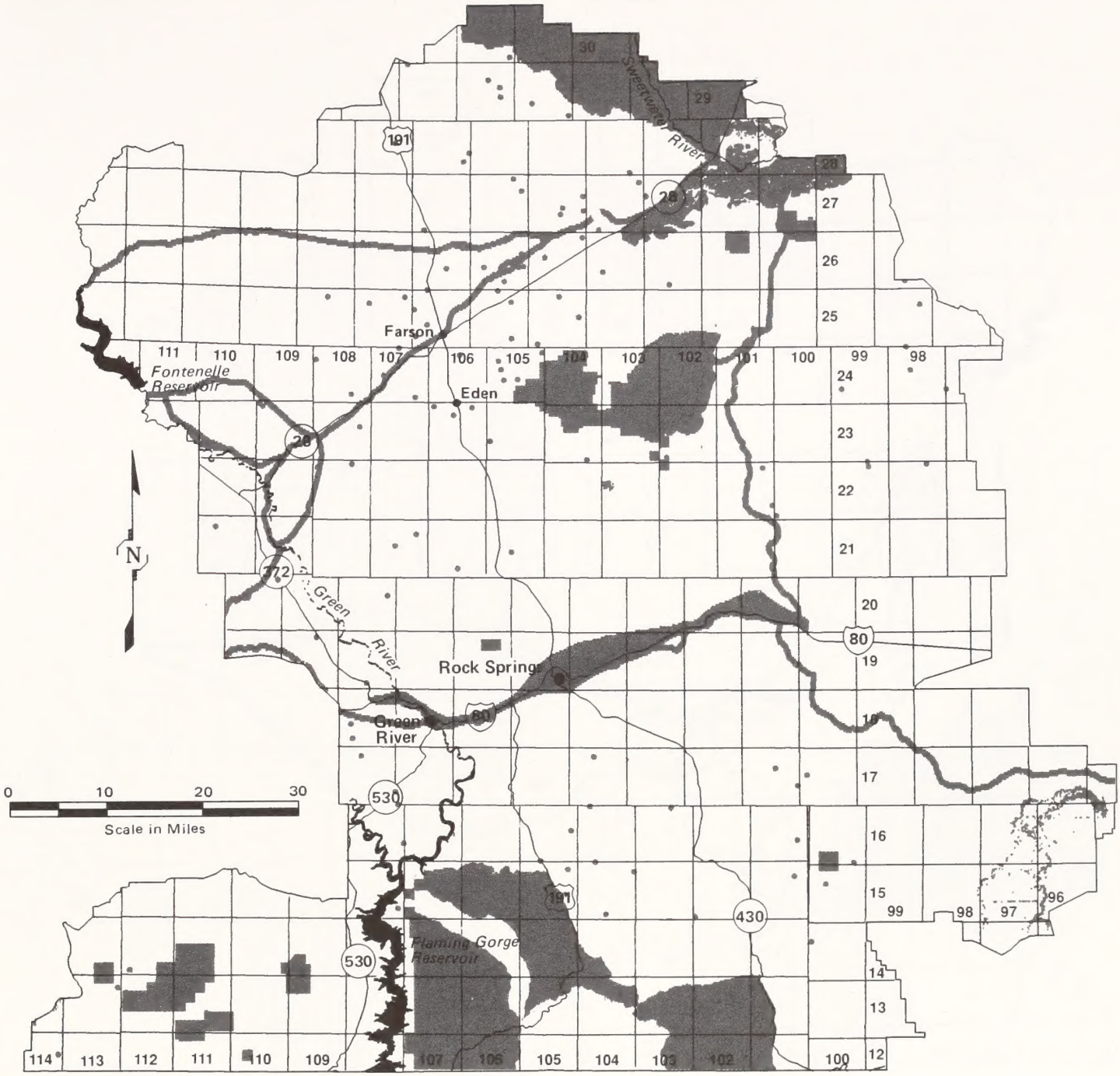


Map 7
Proposed Plan
Land Tenure Adjustment Parcels
Green River Planning Area

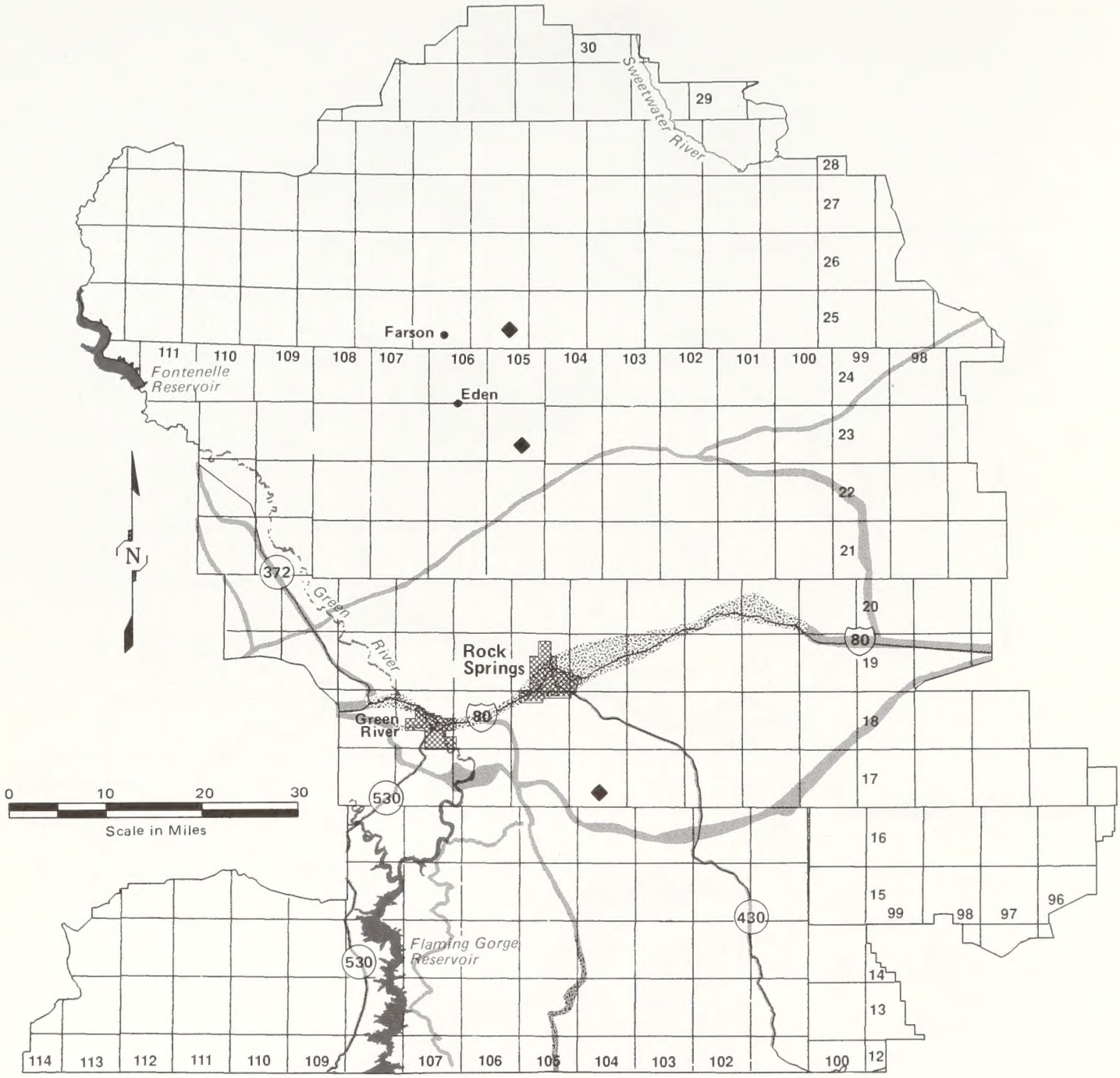


Exclusion Areas

Map 8
Proposed Plan
Rights-of-Way Exclusion Areas
Green River Planning Area



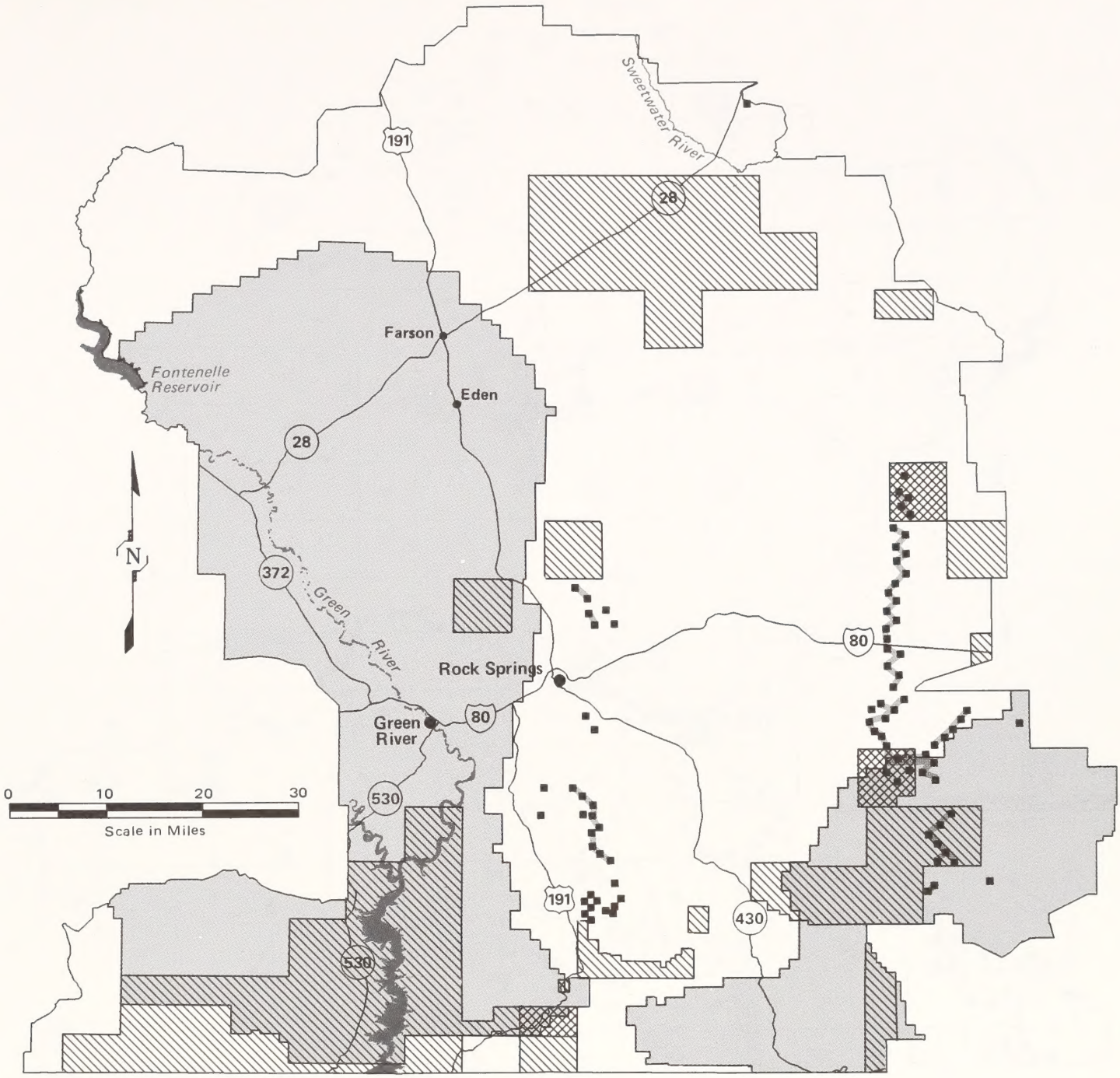
Map 9
Proposed Plan
Rights-of-Way Avoidance Areas
Green River Planning Area



Map 10
Proposed Plan

Rights-of-Way Windows and Communication Sites

Green River Planning Area



Oil Shale Withdrawal

Coal Withdrawal

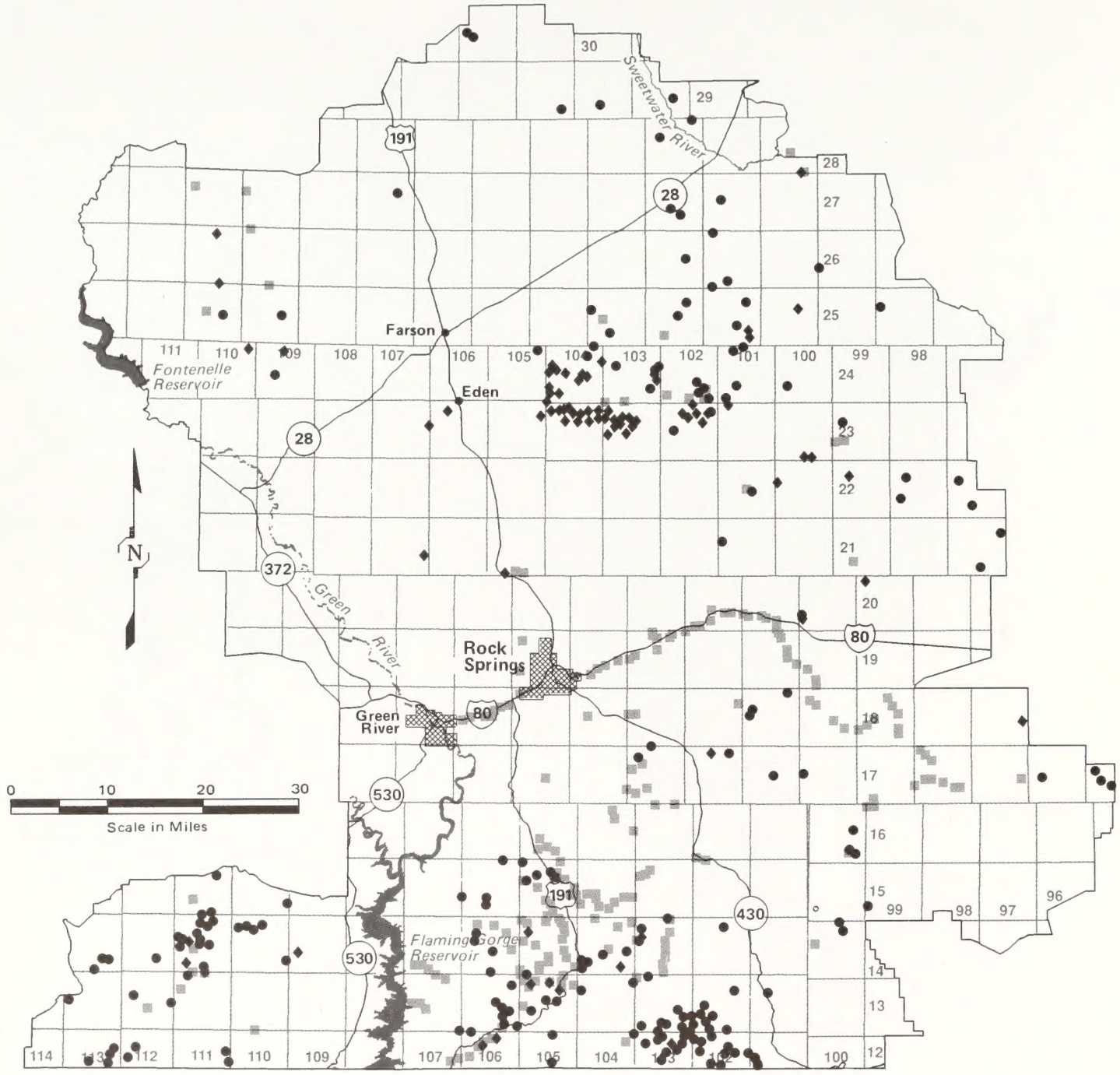
Phosphate Withdrawal

Stock Driveway

Map 11

Existing Withdrawals

Green River Planning Area



Recommended for Retention

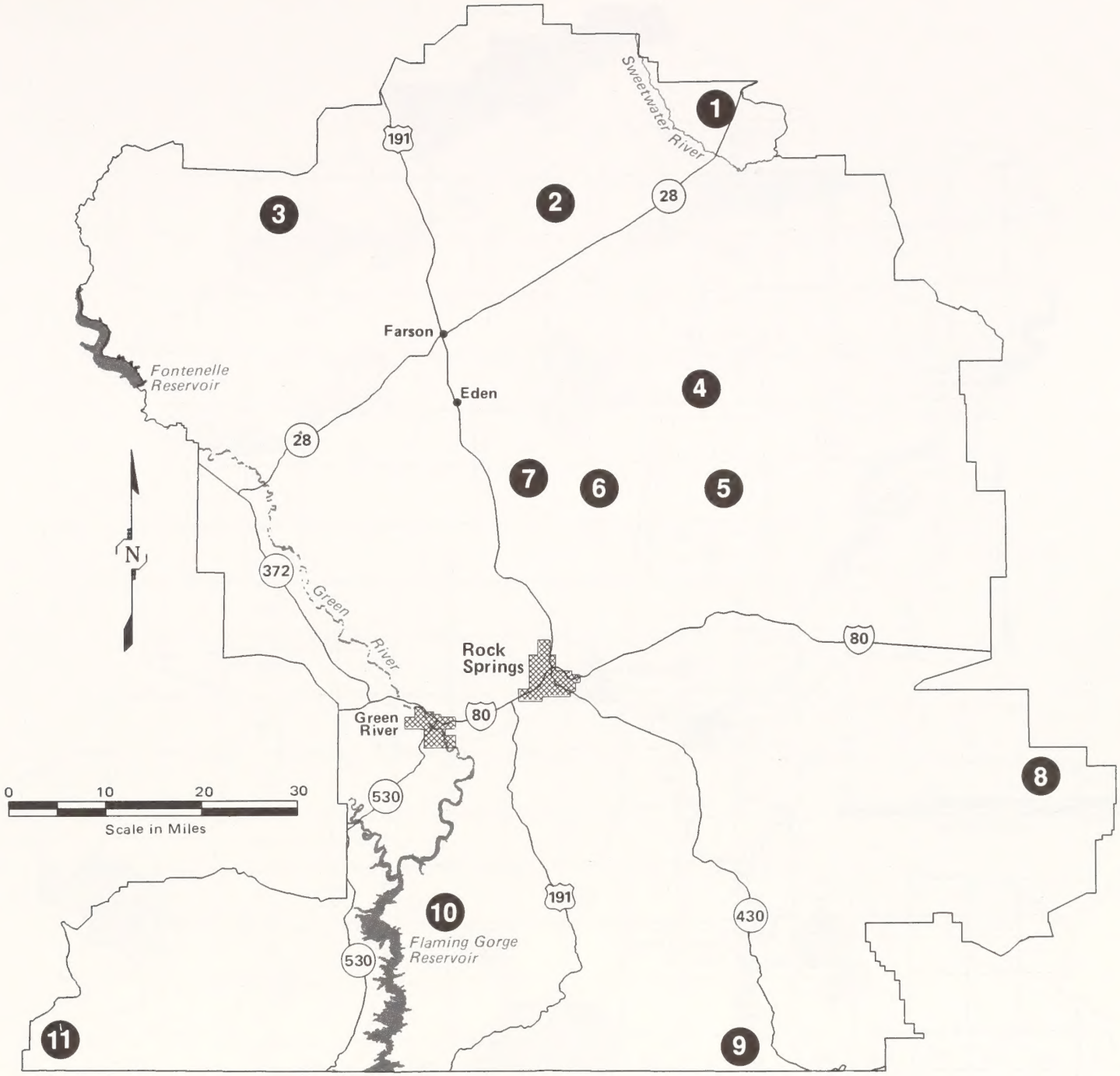
Recommended for Addition

Recommended for Revocation

Map 12

Public Water Reserves

Green River Planning Area

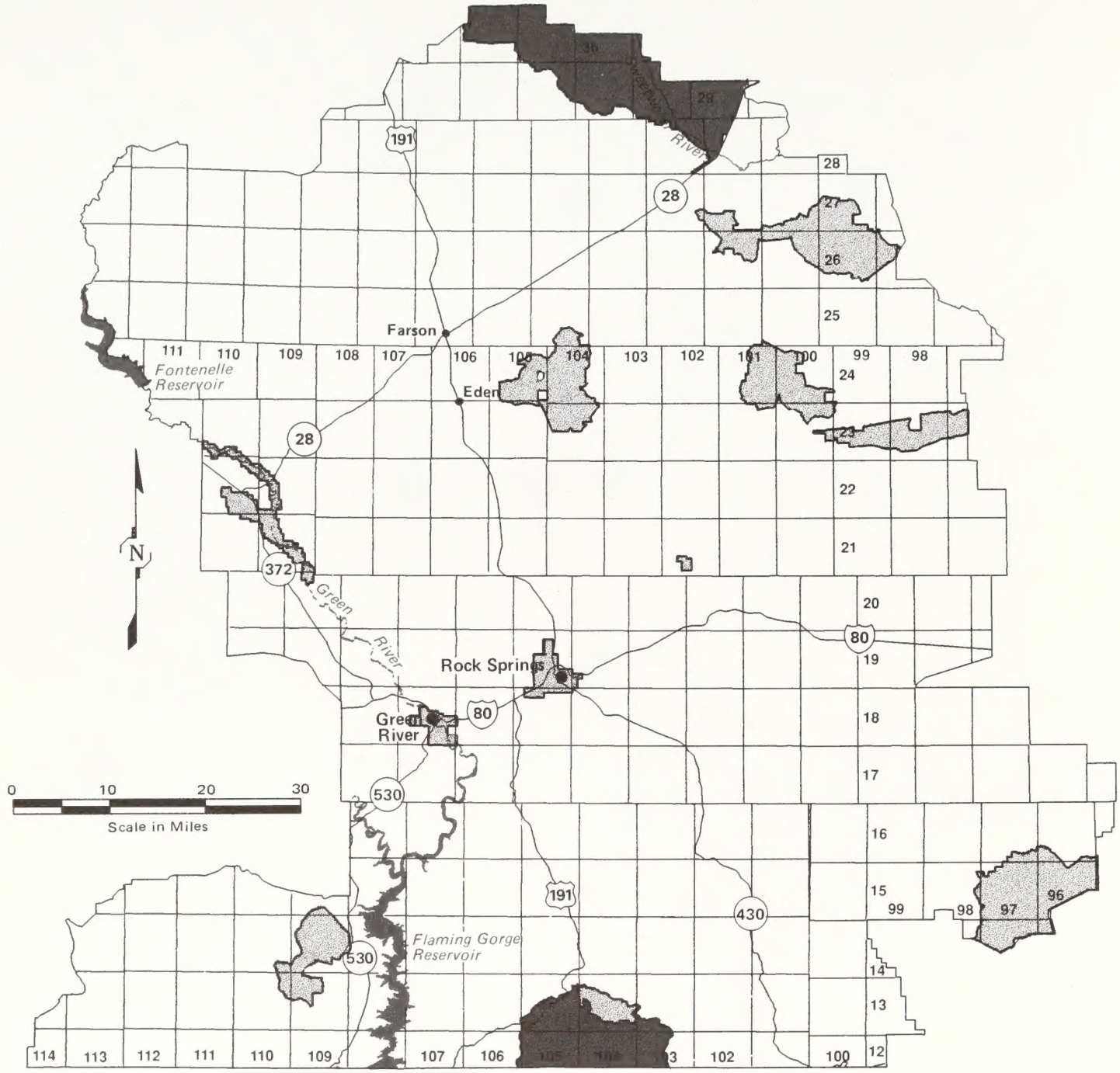


9 Access Number

Map 13

Road Access Needs

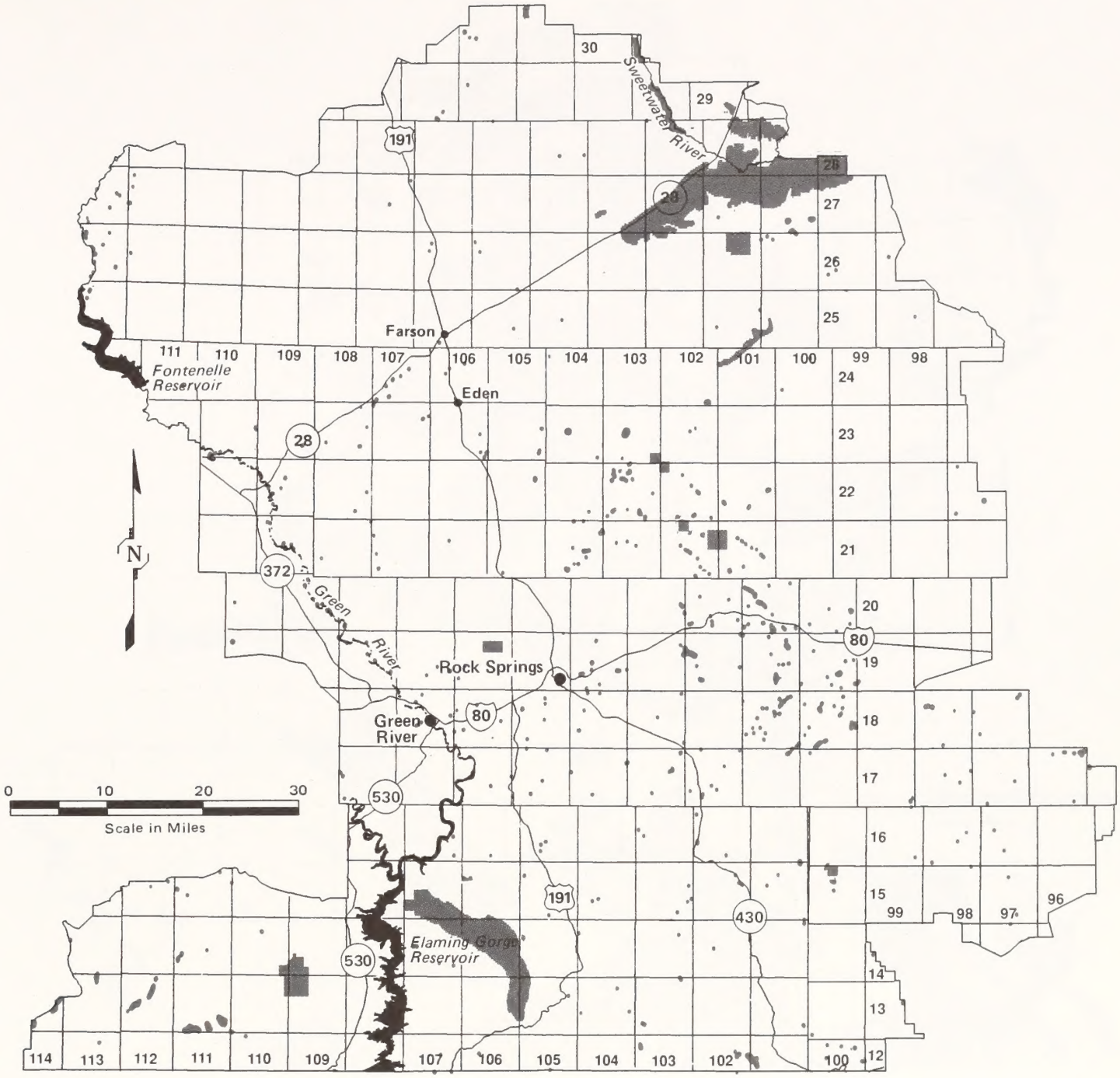
Green River Planning Area



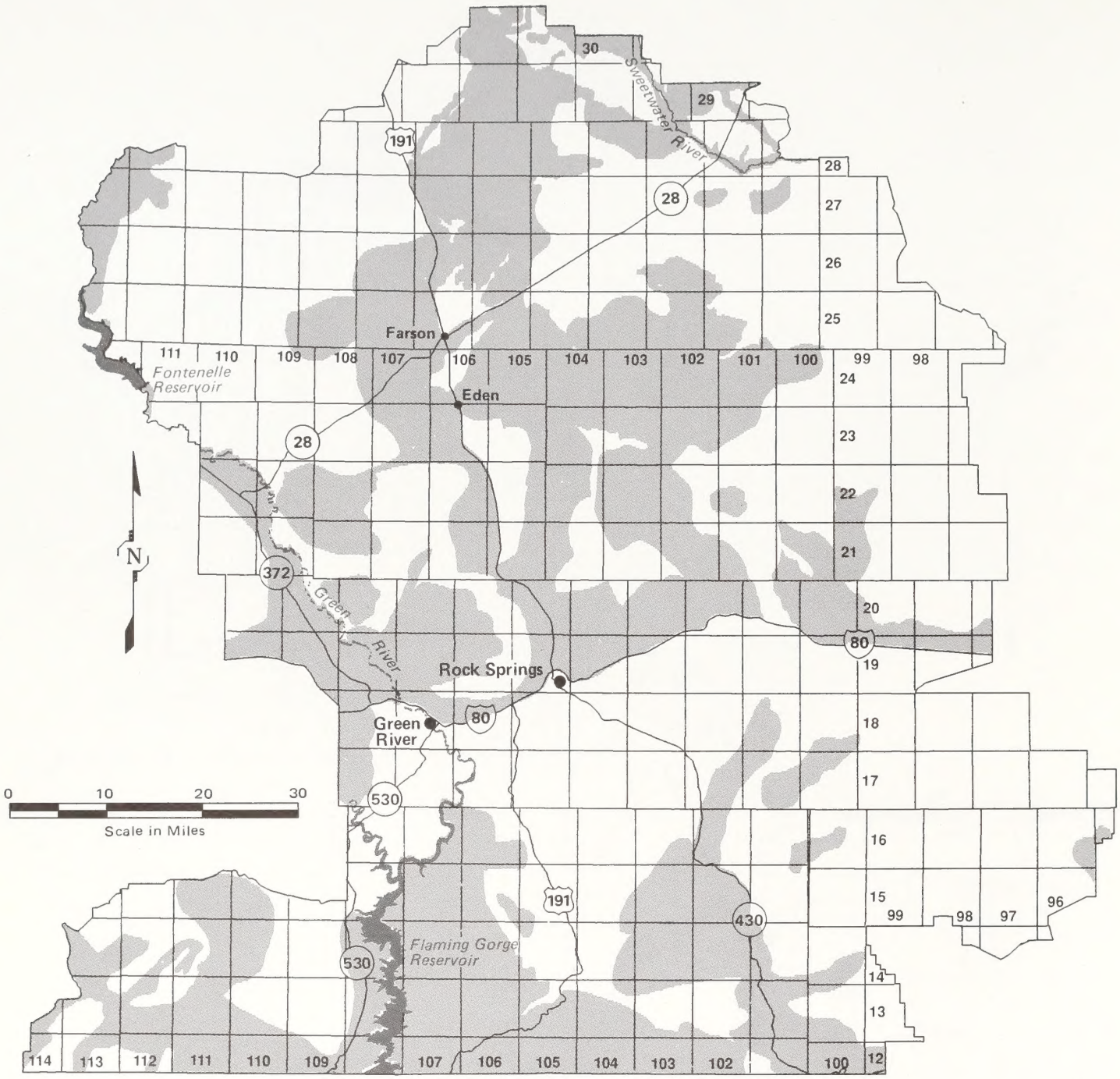
No Lease

Non-discretionary Closure

Map 14
Proposed Plan
No Lease Areas
Green River Planning Area



Map 15
Proposed Plan
No Surface Occupancy Areas
Green River Planning Area

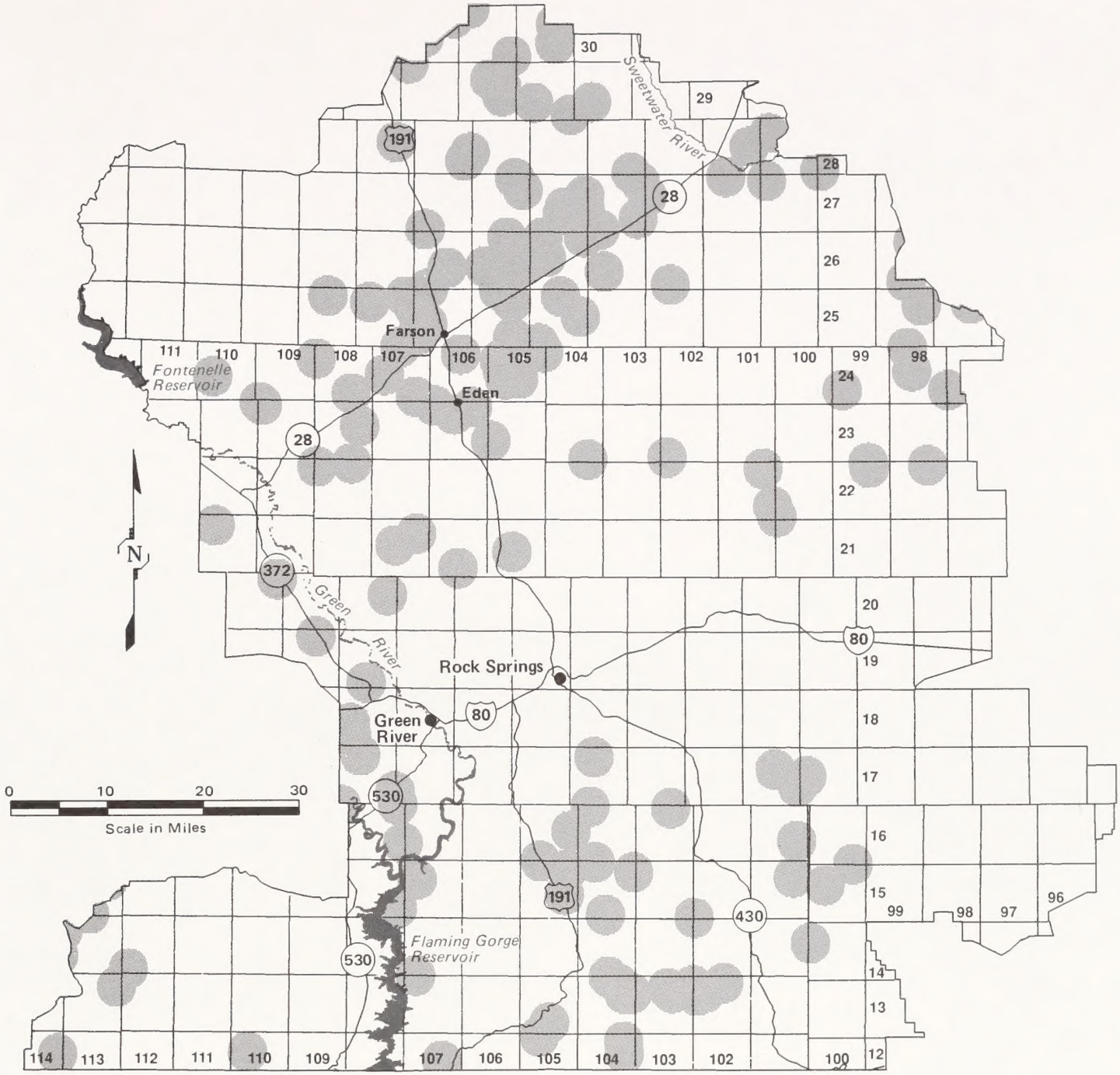


Seasonal Restriction Area

Map 16
Proposed Plan

Big Game Crucial Winter Ranges and Parturition Areas

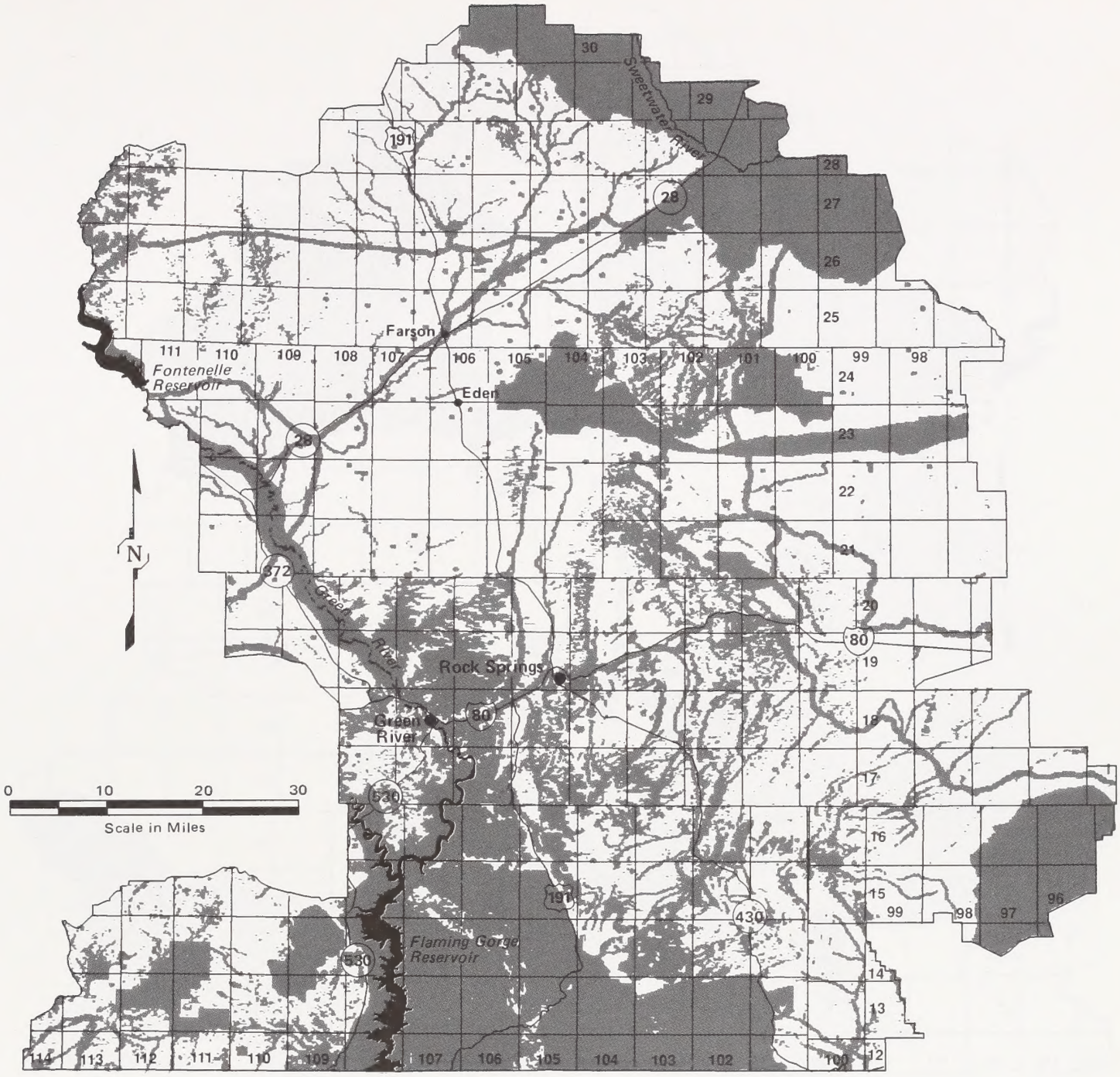
Green River Planning Area



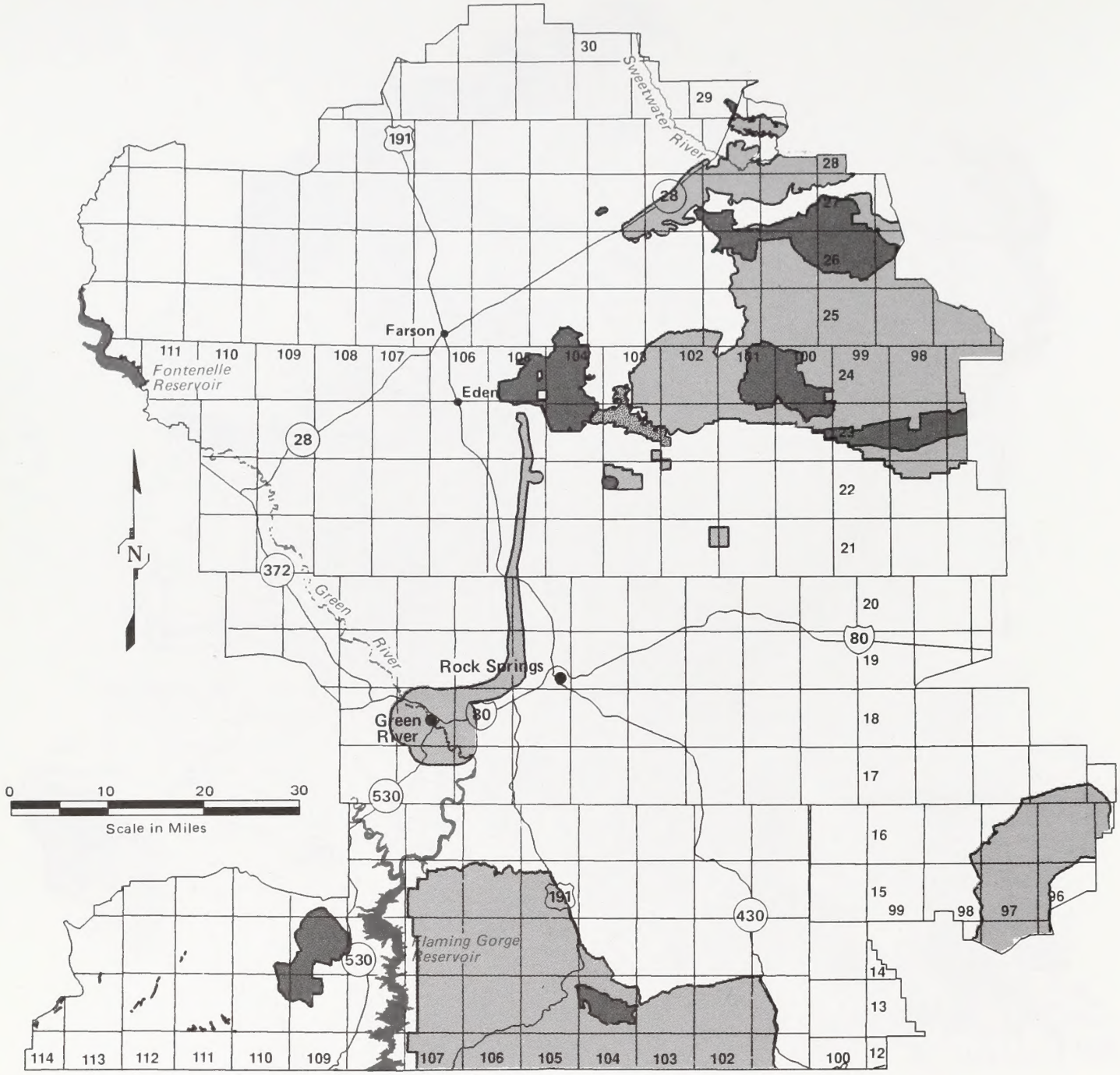
Map 17
Proposed Plan, Alternatives A and C
Sage Grouse Seasonal Restriction Areas
Green River Planning Area



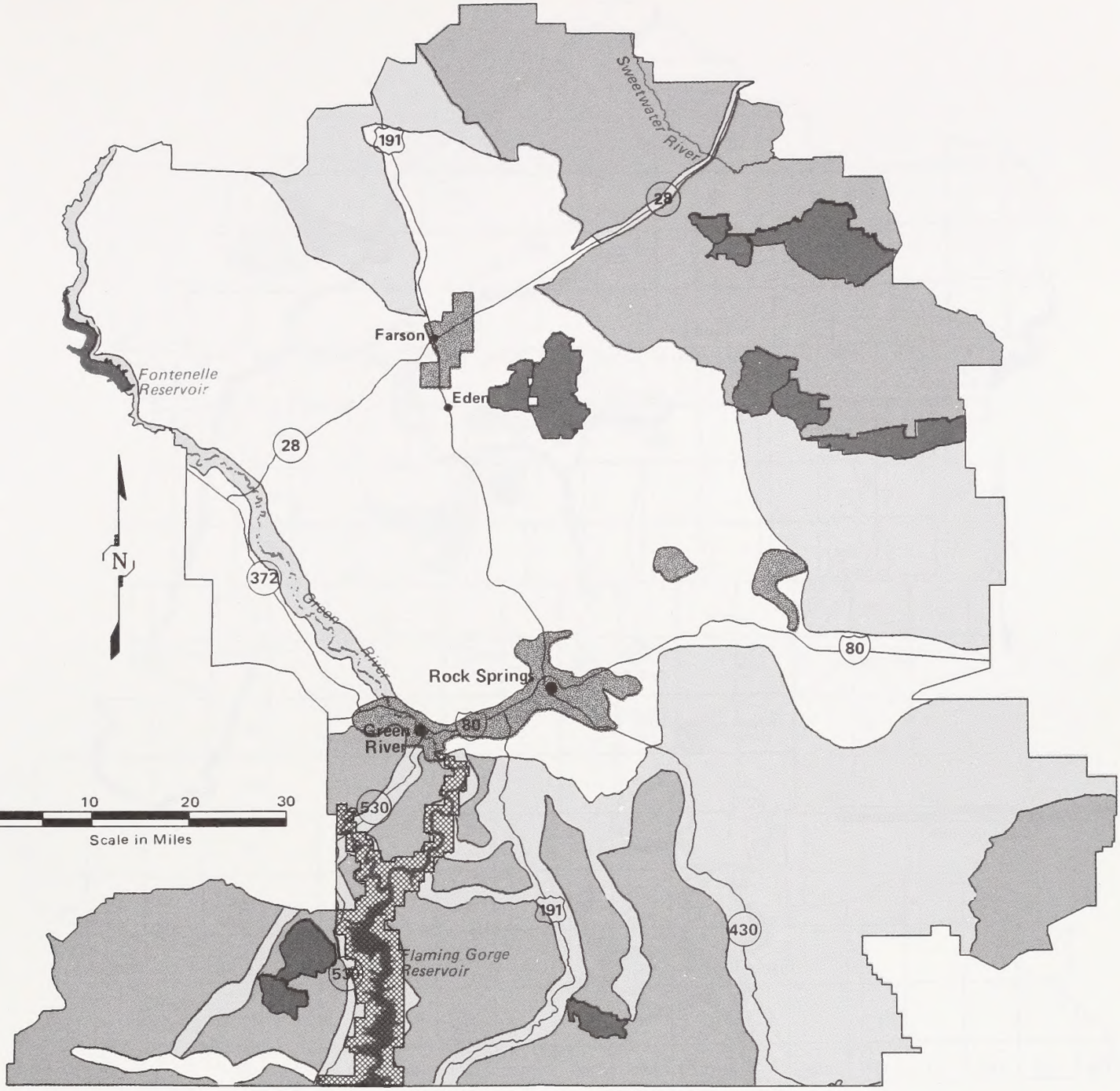
Map 18
All Alternatives
Raptor Seasonal Restriction Areas
Green River Planning Area



Map 19
Proposed Plan
Lease with Controlled Surface Use Stipulations
Green River Planning Area



Map 20
Proposed Plan
Off-Road Vehicle Designations
Green River Planning Area

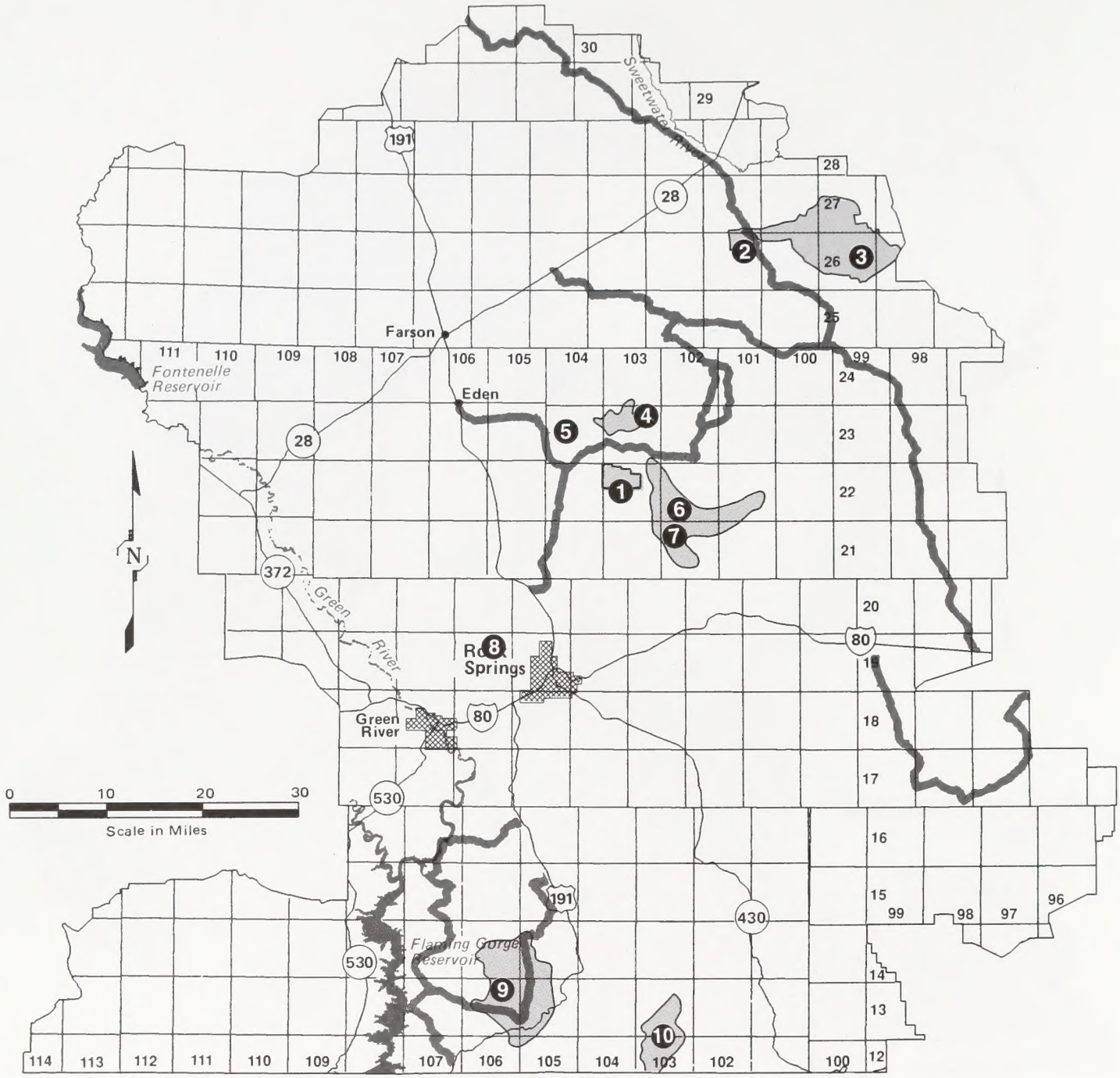


Semiprimitive-Nonmotorized
Semiprimitive-Motorized
Roaded Natural
Rural
Modern Urban
National Recreation Area

Map 21

Recreation Opportunity Spectrum

Green River Planning Area



Recreational Use Areas

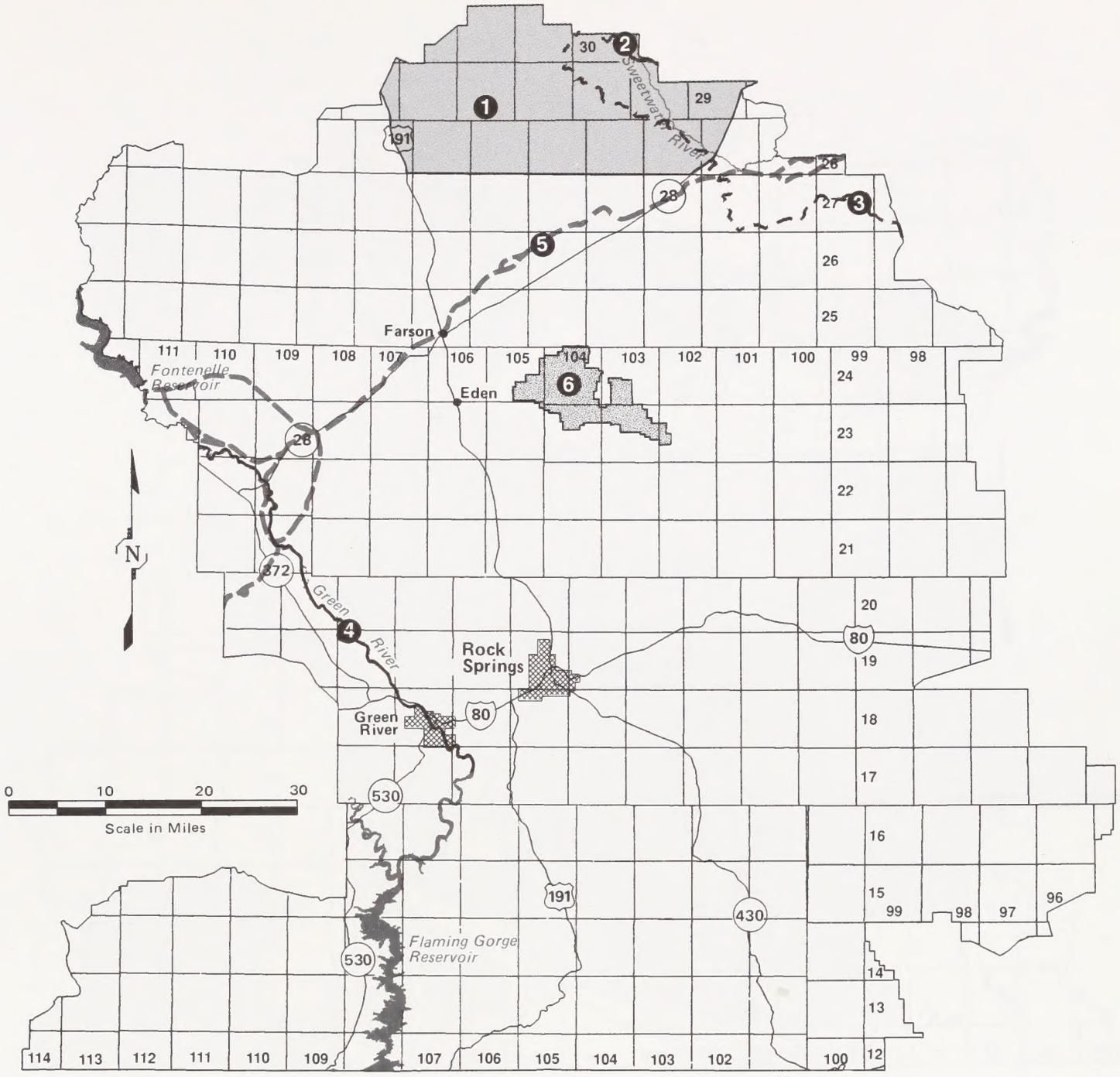
1. Cedar Canyon
2. Oregon Buttes
3. Honeycomb Buttes
4. Steamboat
5. Boar's Tusk
6. Leucite Hills
7. Emmons Cone
8. Pilot Butte
9. Little Mountain
10. Pine Mountain

Roads under consideration for Back Country Byway Designation

Map 22

Recreation Use Areas

Green River Planning Area

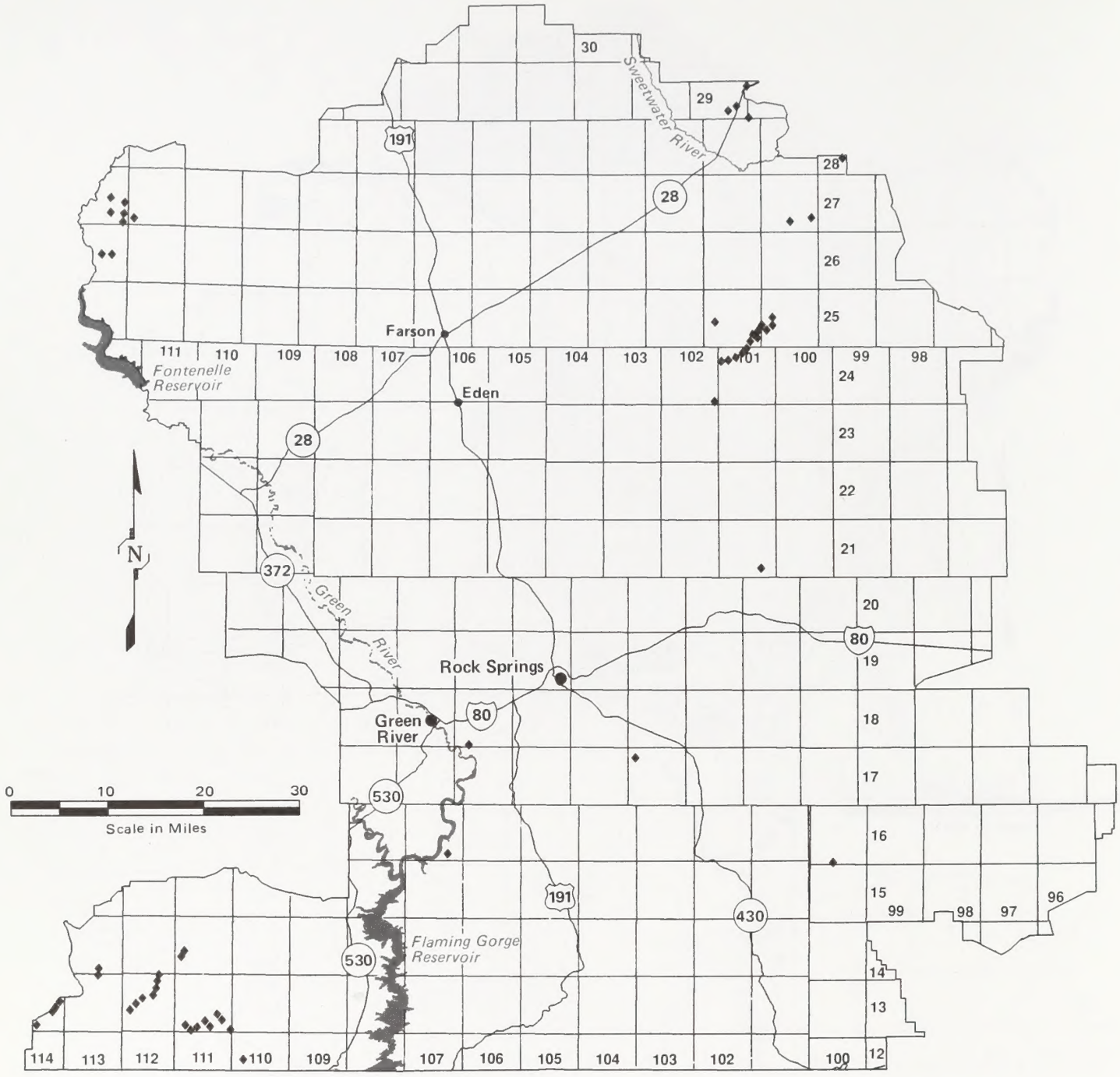


1. Wind River Front
2. Wyoming Continental Divide Snowmobile Trail
3. Continental Divide National Scenic Trail
4. Green River
5. Oregon-Mormon Pioneer-California-Pony Express National Historic Trails
6. Greater Sand Dunes

Map 23

Special Recreation Management Areas

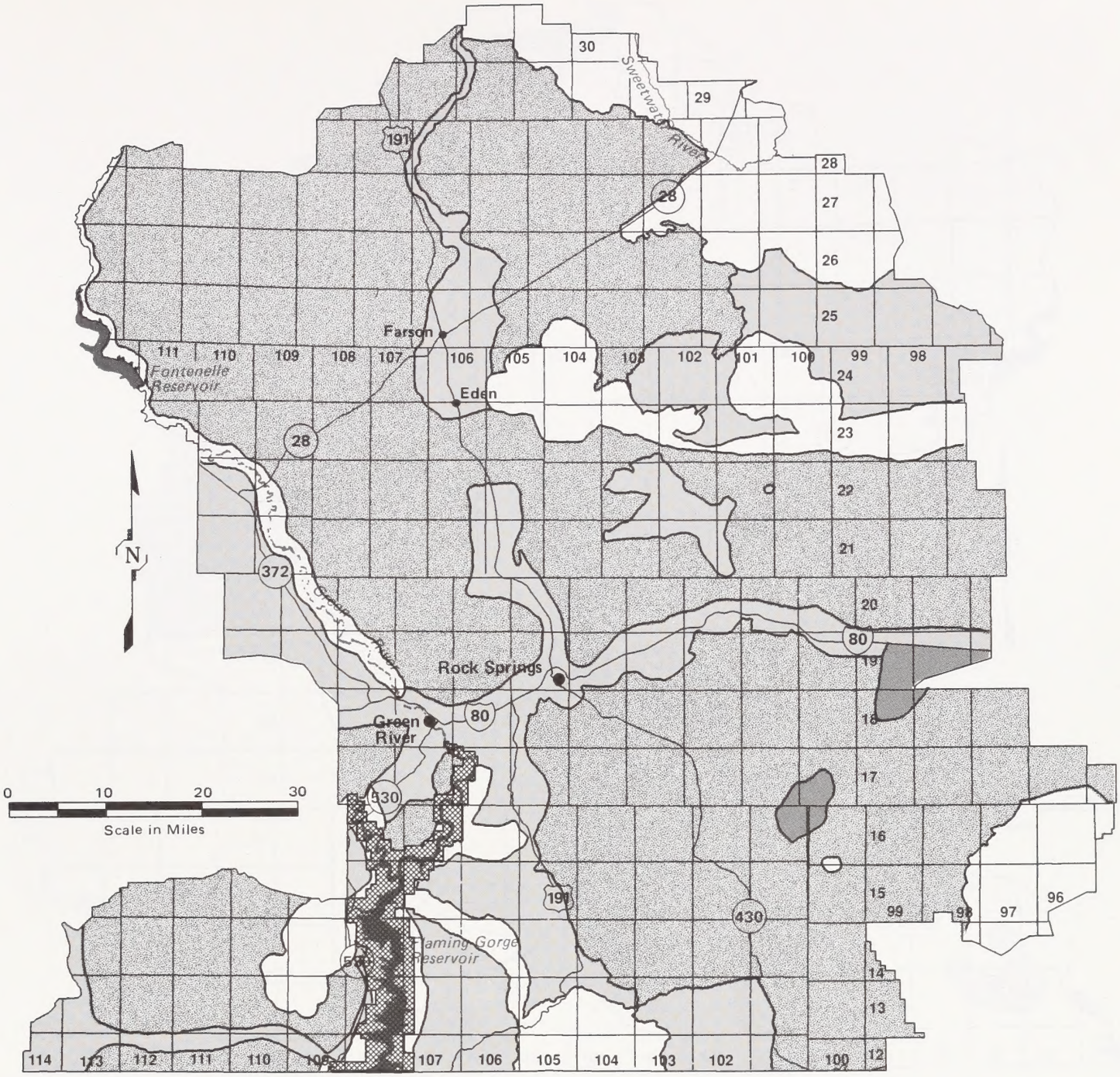
Green River Planning Area



Map 24

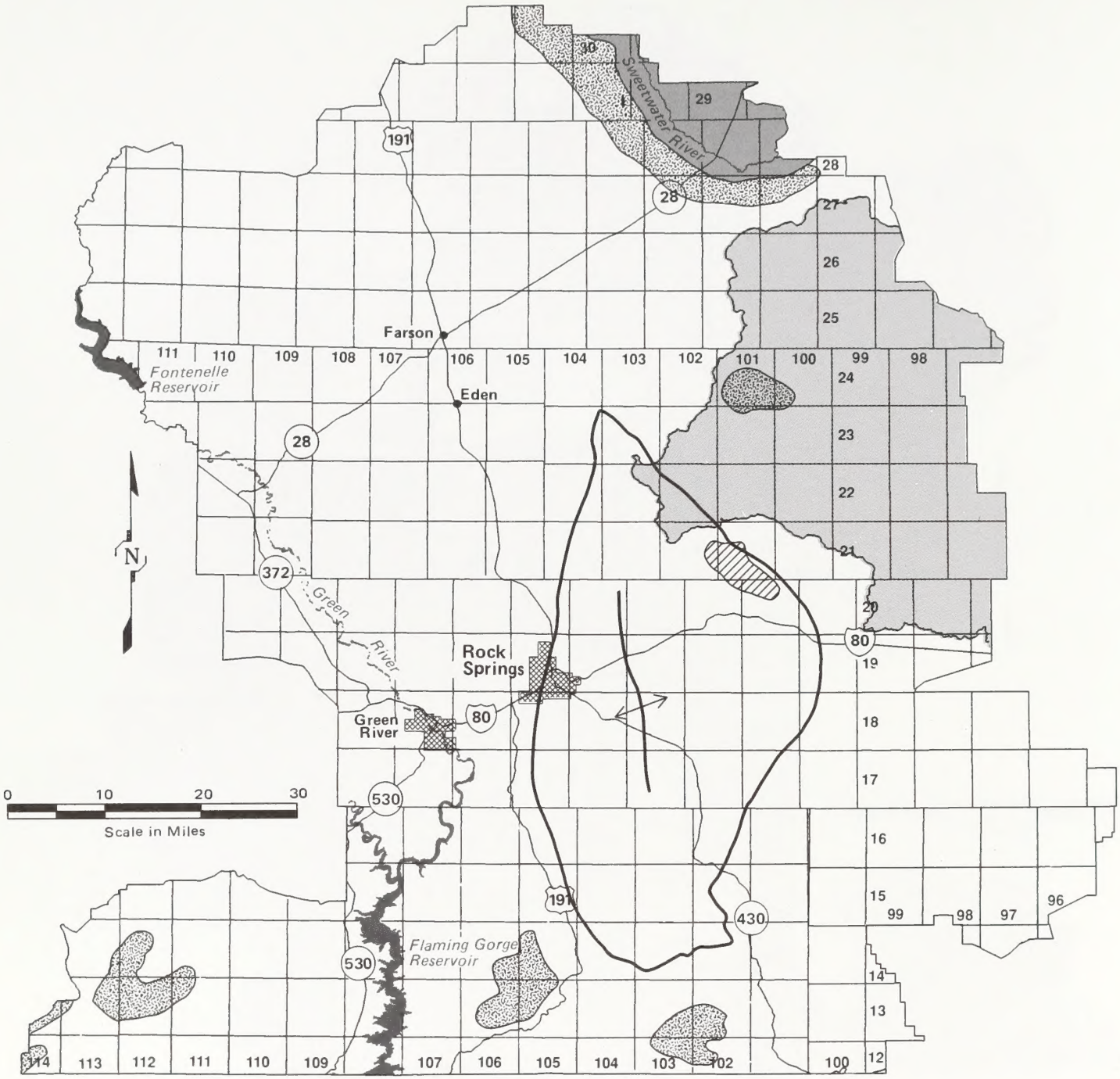
Special Status Plant Species

Green River Planning Area



Class II
Class III
Class IV
Rehabilitation Area
National Recreation Area

Map 25
Proposed Plan
Visual Resource Management
Green River Planning Area



Green River Watershed

Sweetwater River Watershed

Great Divide Basin Watershed

Superior Recharge Area

Other Recharge Areas

Rock Springs Uplift

Map 26

Areas of Hydrologic Concern

Green River Planning Area



Streams and Lakes

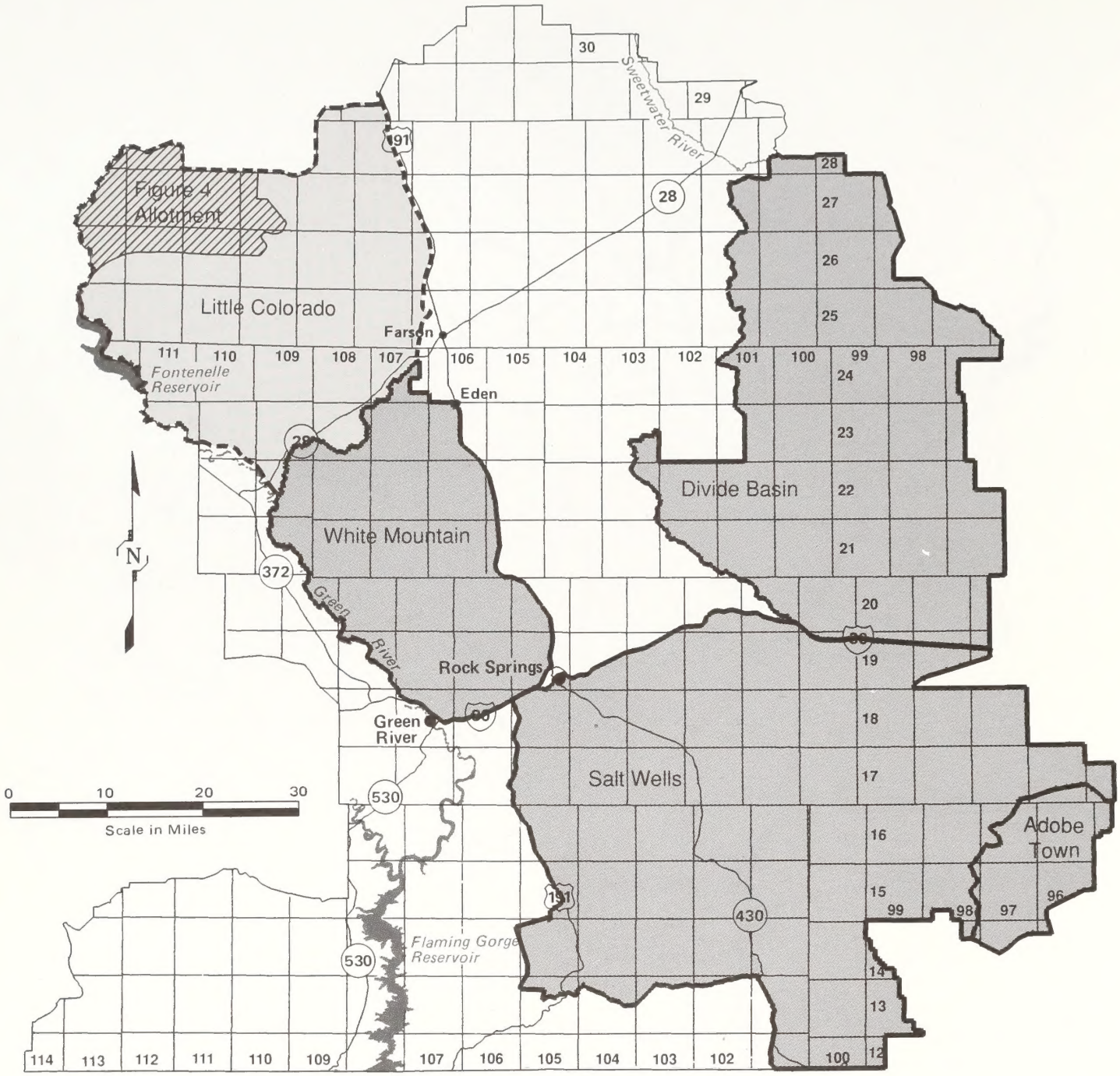
Floodplains

Note: Floodplain data is incomplete

Map 27

Waters and Floodplains

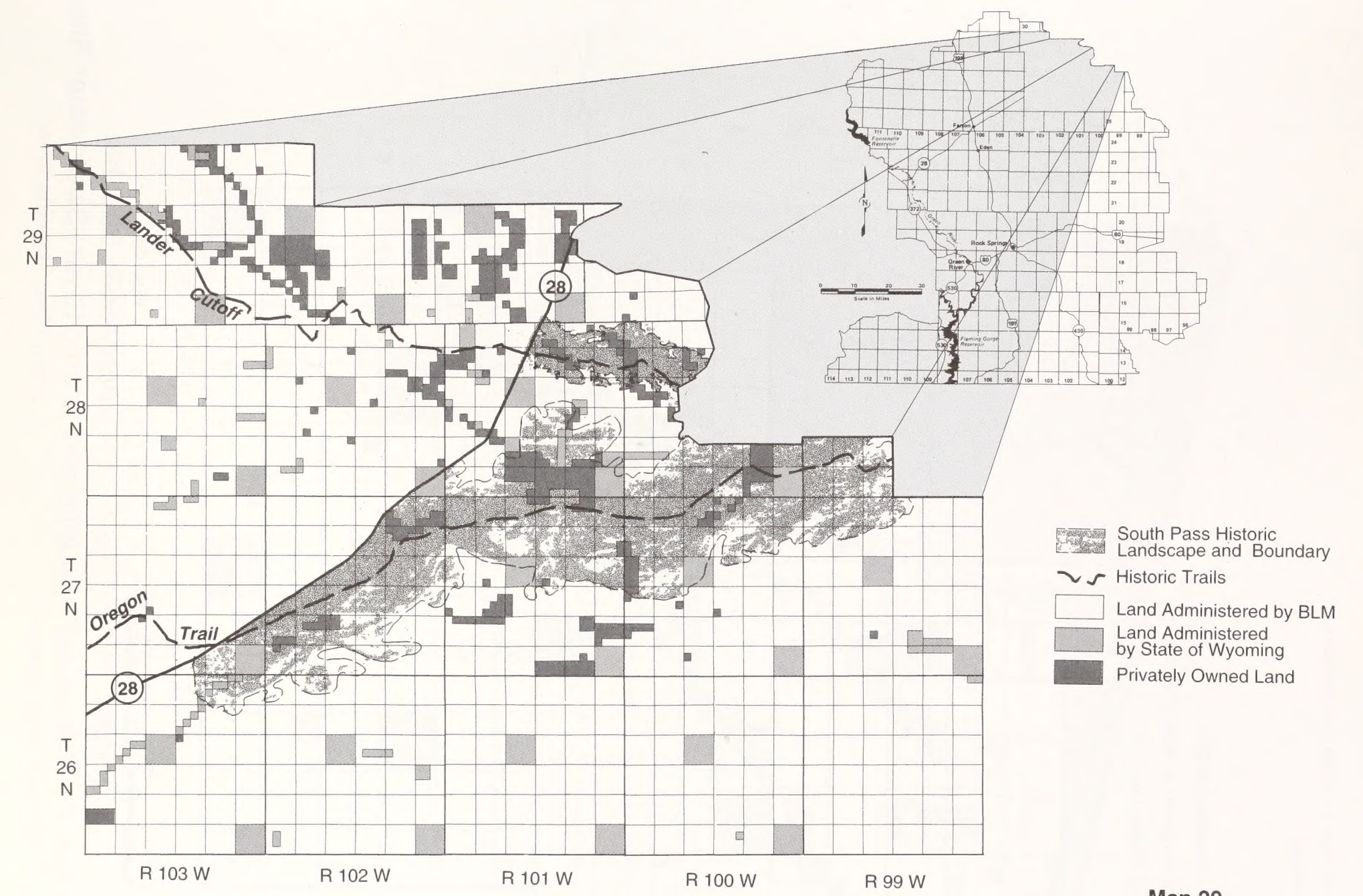
Green River Planning Area



Map 28

Existing, Interim, and Proposed Wild Horse Herd Management Areas

Green River Planning Area



Note: Only Federal surface acres are included in the proposed landscape

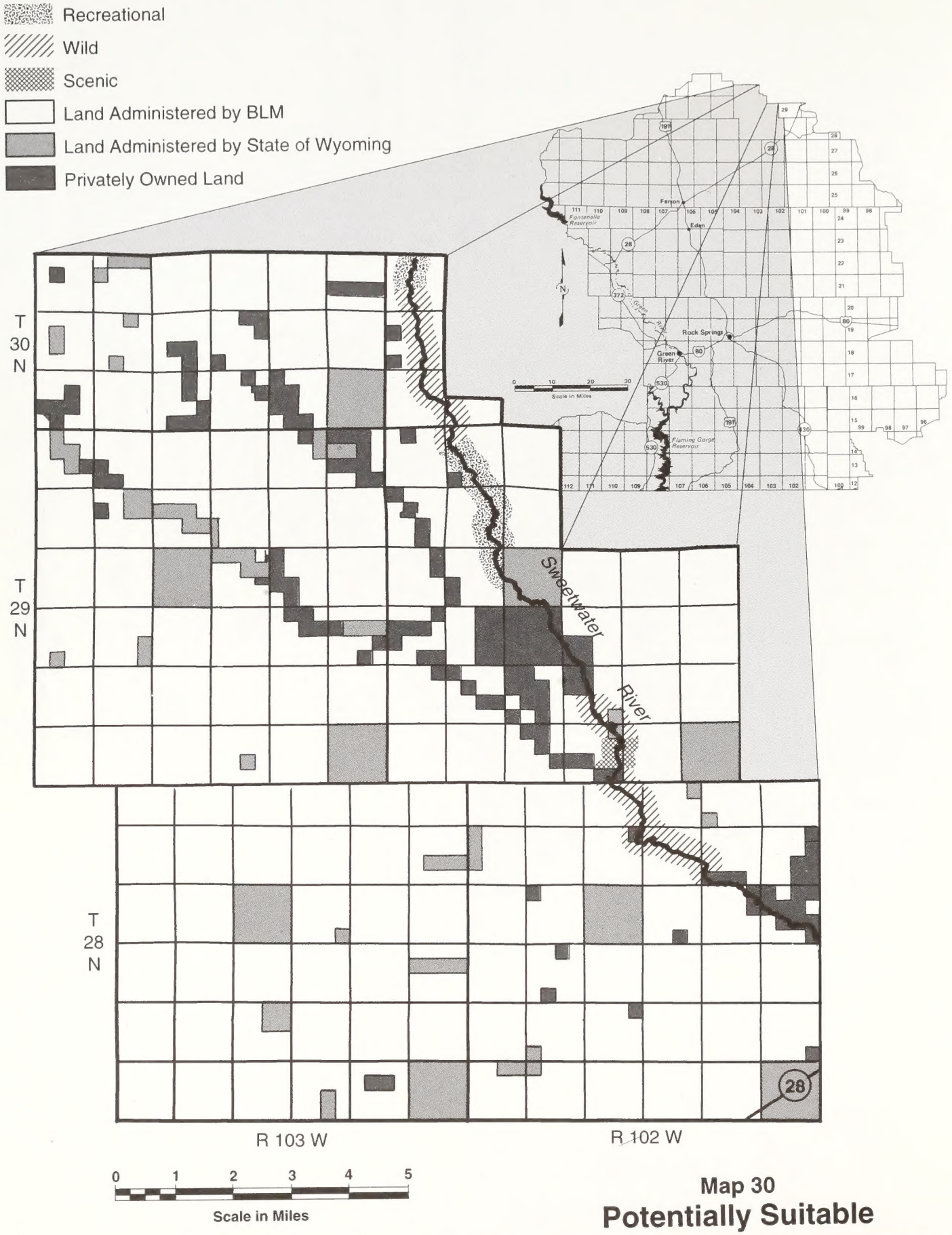
0 1 2 3 4 5 10

Scale in Miles

Map 29

Proposed South Pass Historic Landscape

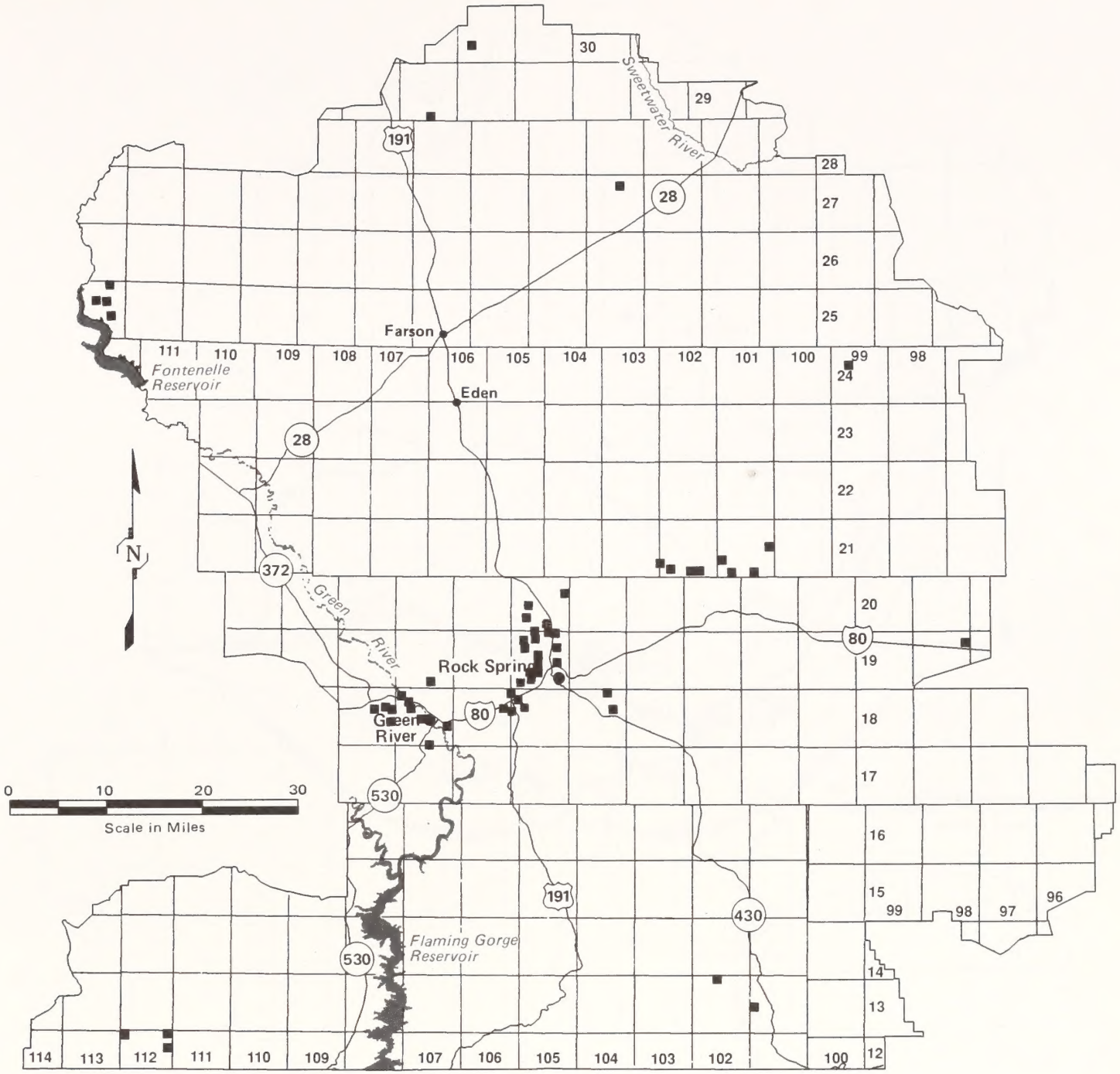
Green River Planning Area



Map 30

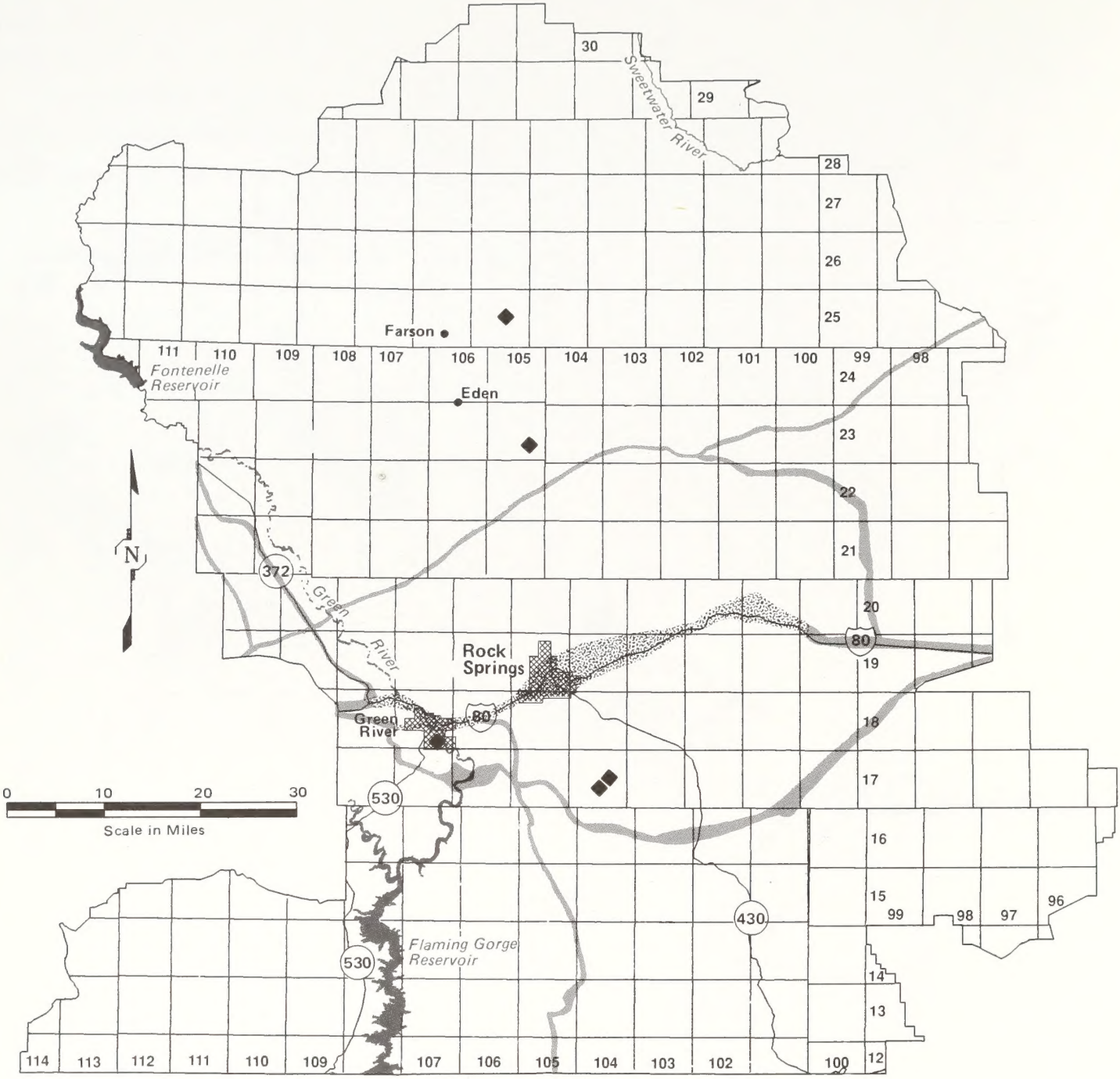
Potentially Suitable Wild and Scenic River--Sweetwater River

Green River Planning Area



Disposal Area

Map 31
Alternative A
Land Tenure Adjustment Parcels
Green River Planning Area



Existing Windows

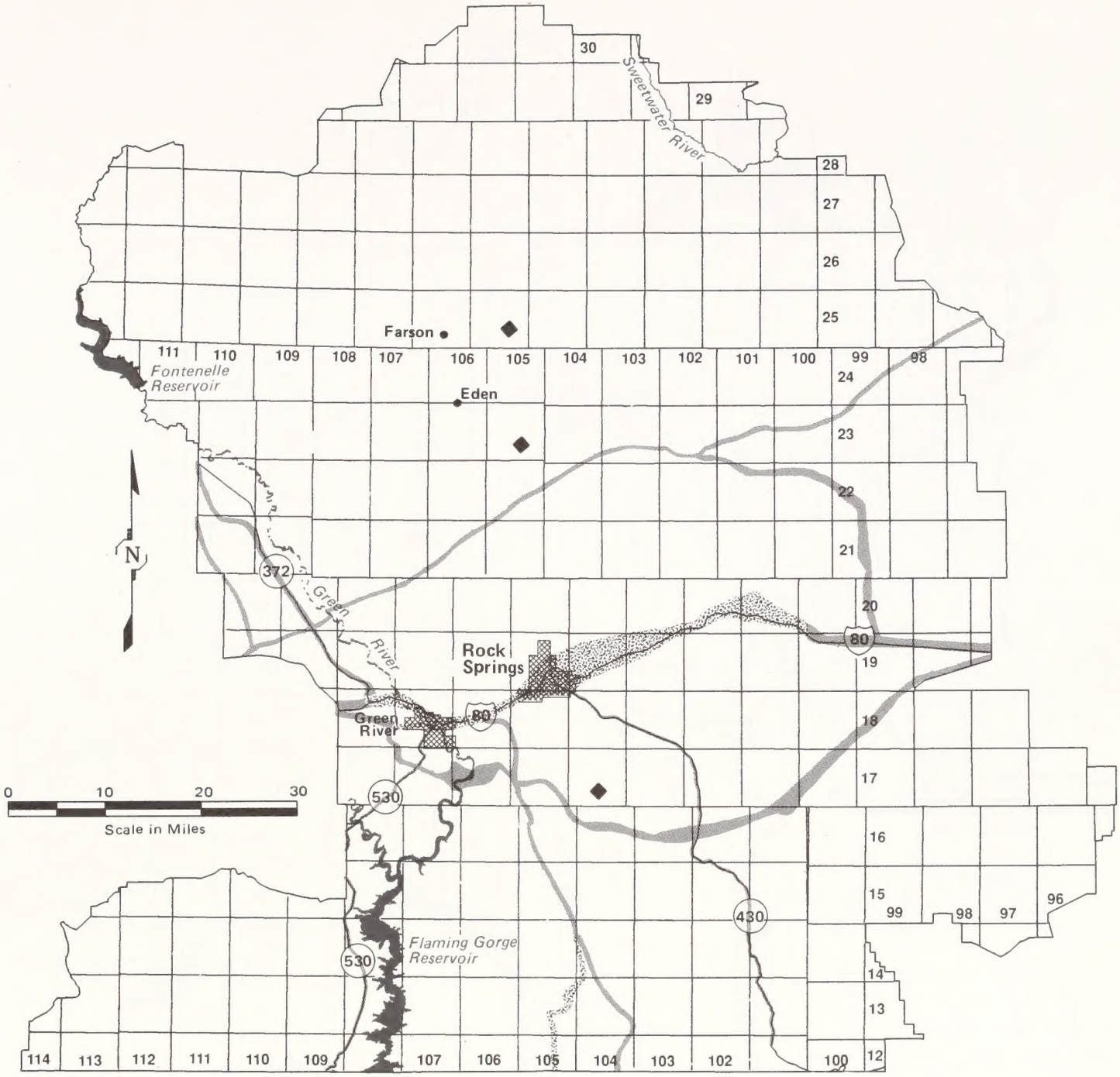
Avoidance Area

Communication Sites

Map 32
Alternative A

Rights-of-Way Windows and Communication Sites

Green River Planning Area



Existing Windows

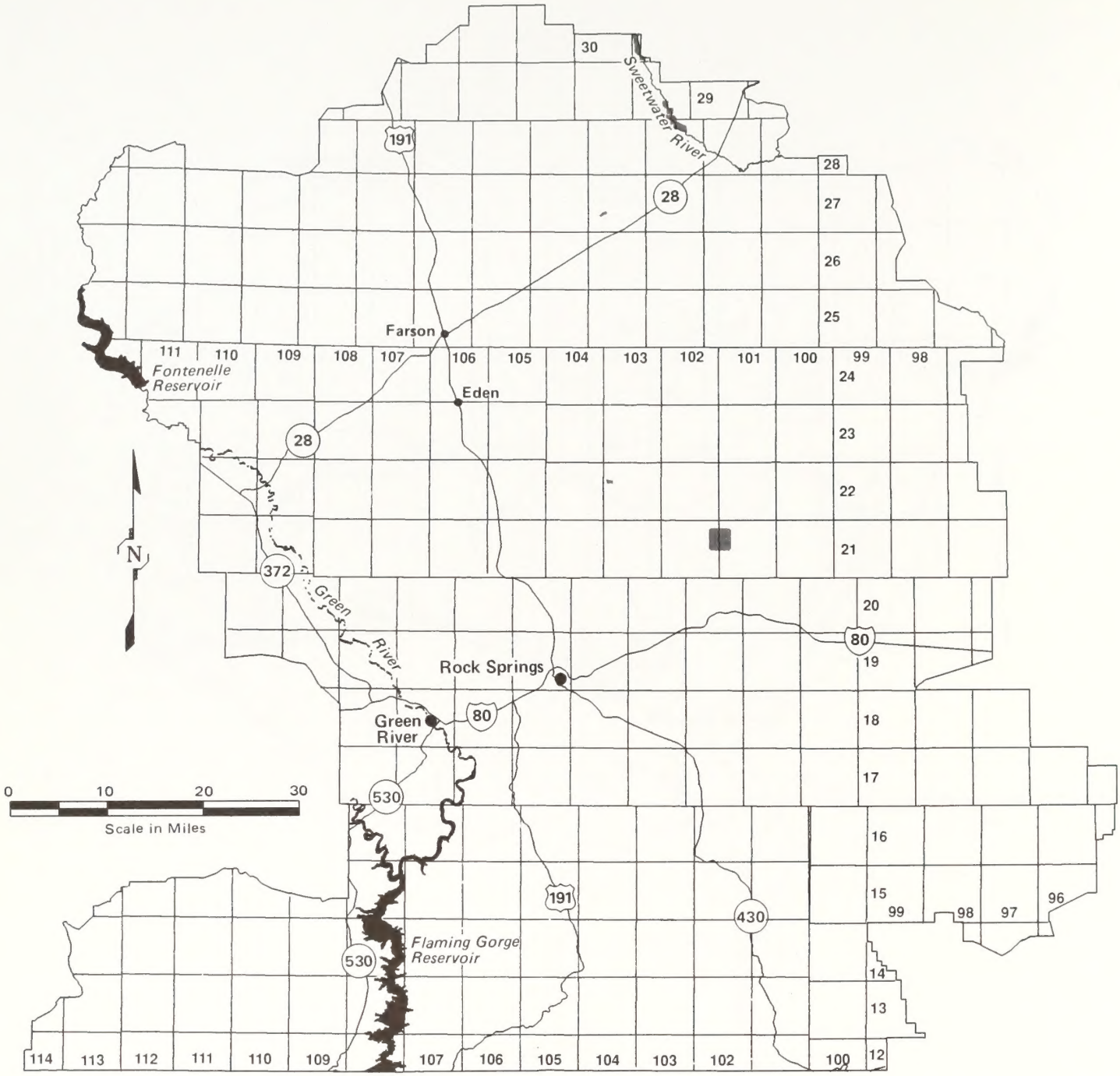
Avoidance Area

Communication Sites

Map 33
Alternative B

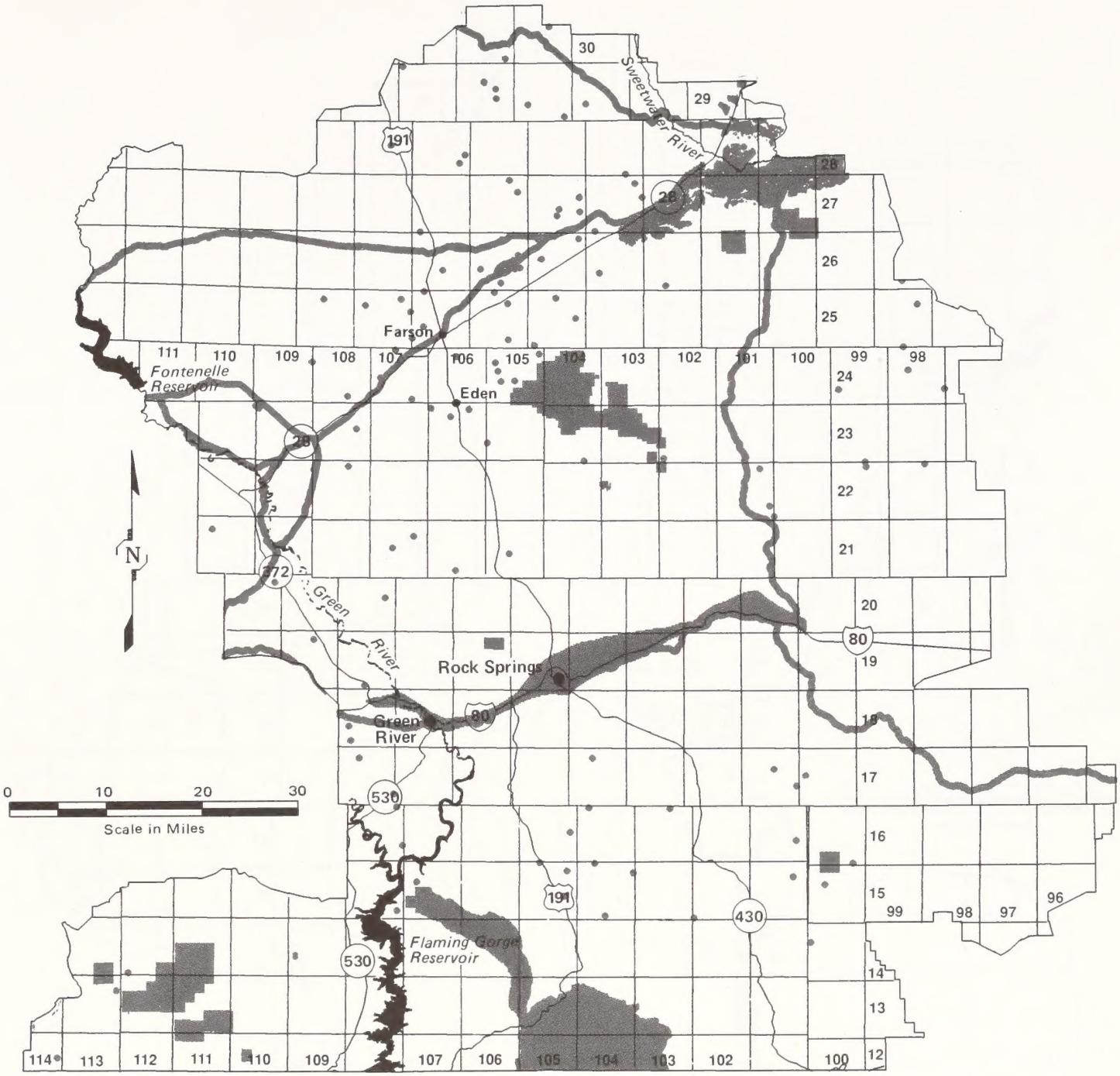
Rights-of-Way Windows and Communication Sites

Green River Planning Area



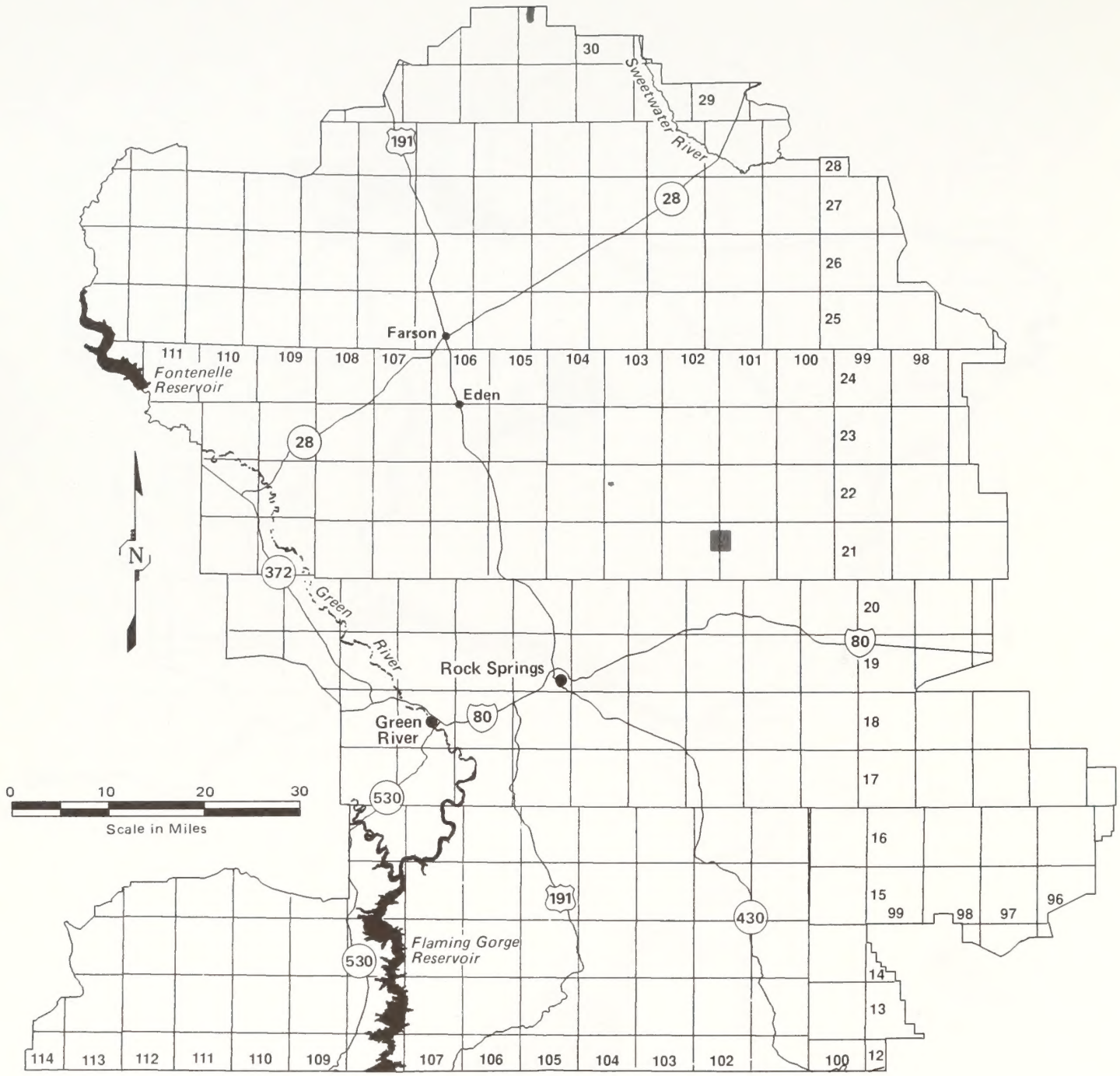
Exclusion Areas

Map 34
Alternative A
Rights-of-Way Exclusion Areas
Green River Planning Area



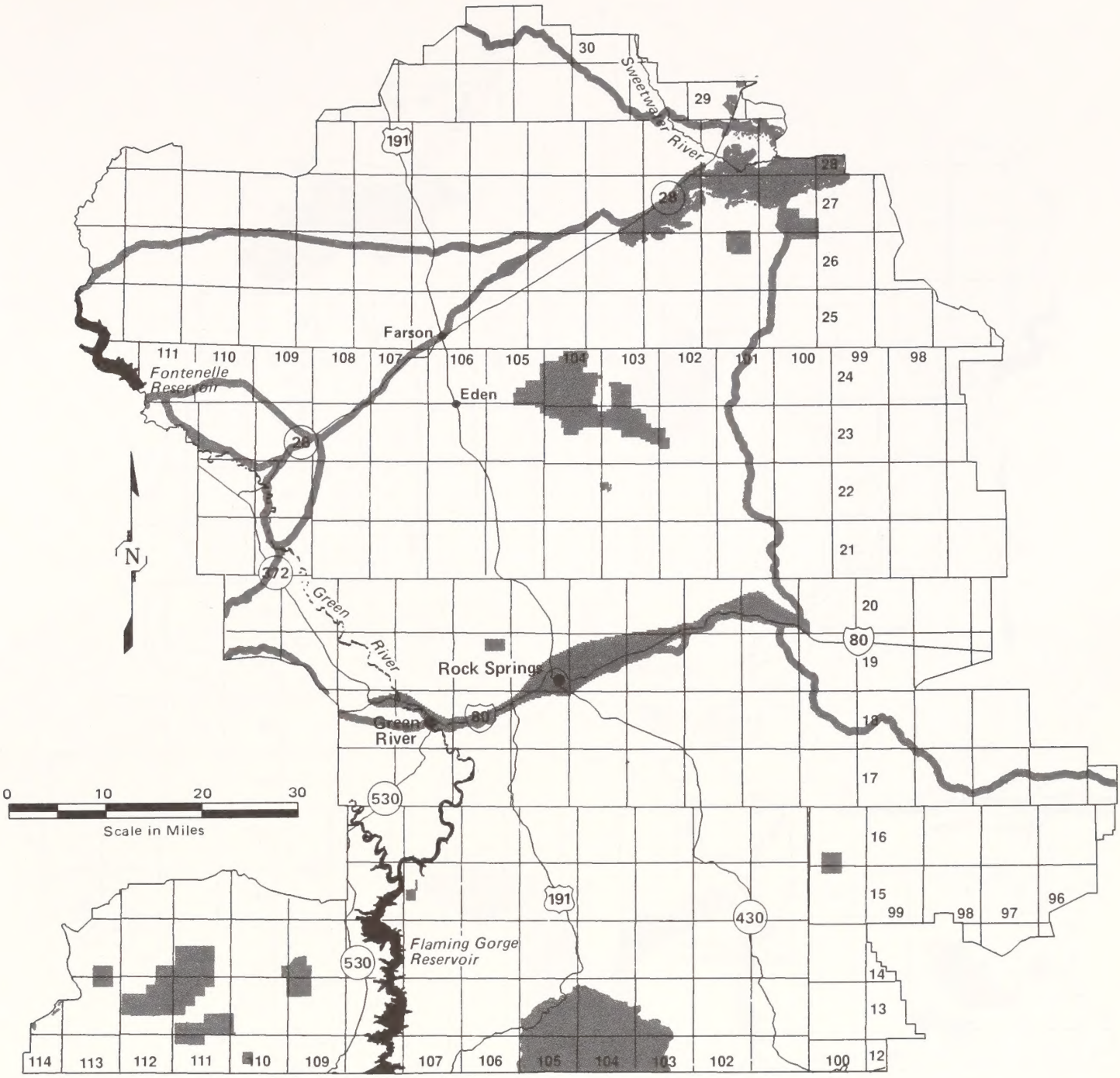
Avoidance Areas

Map 35
Alternative A
Rights-of-Way Avoidance Areas
Green River Planning Area

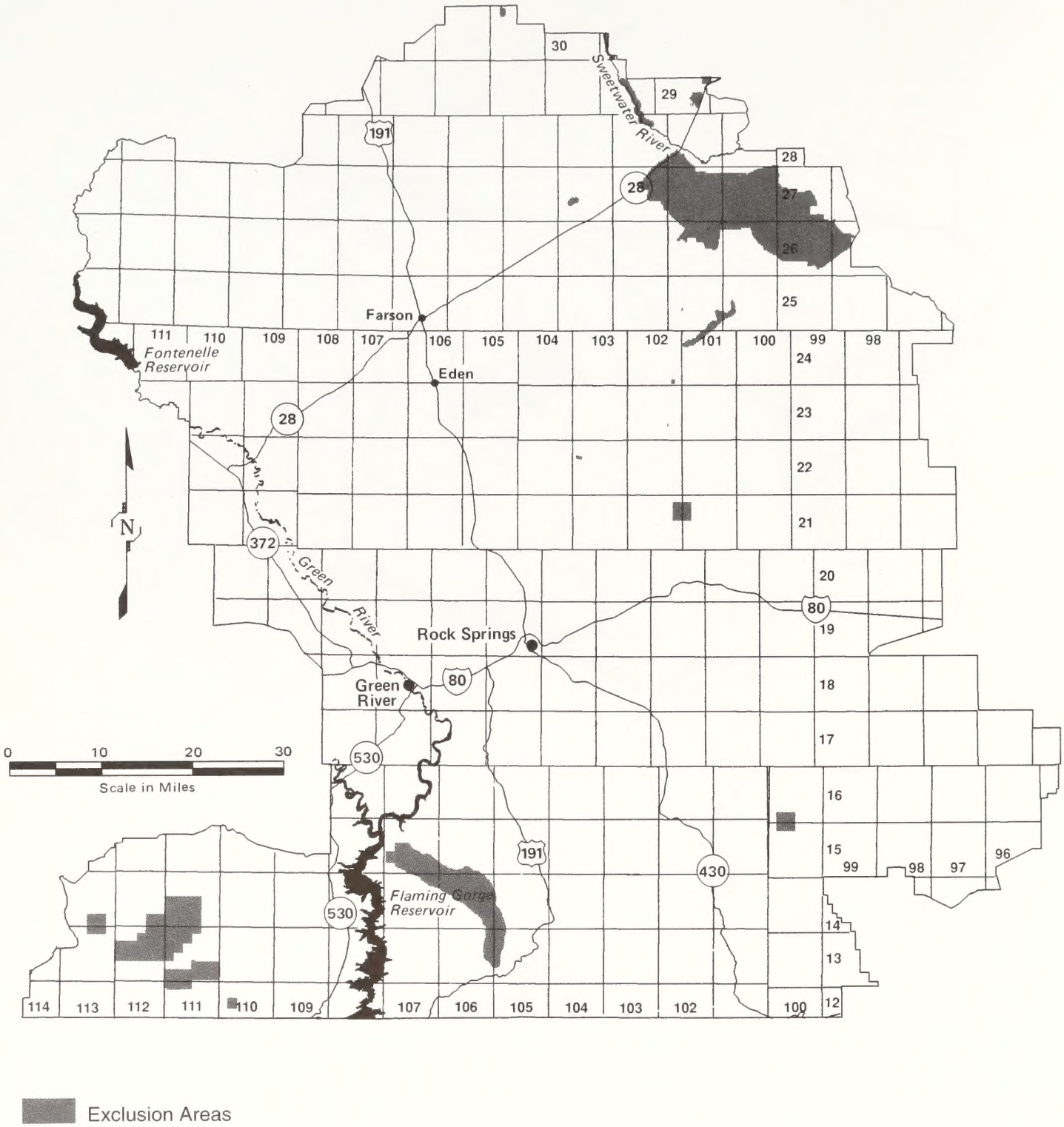


Exclusion Areas

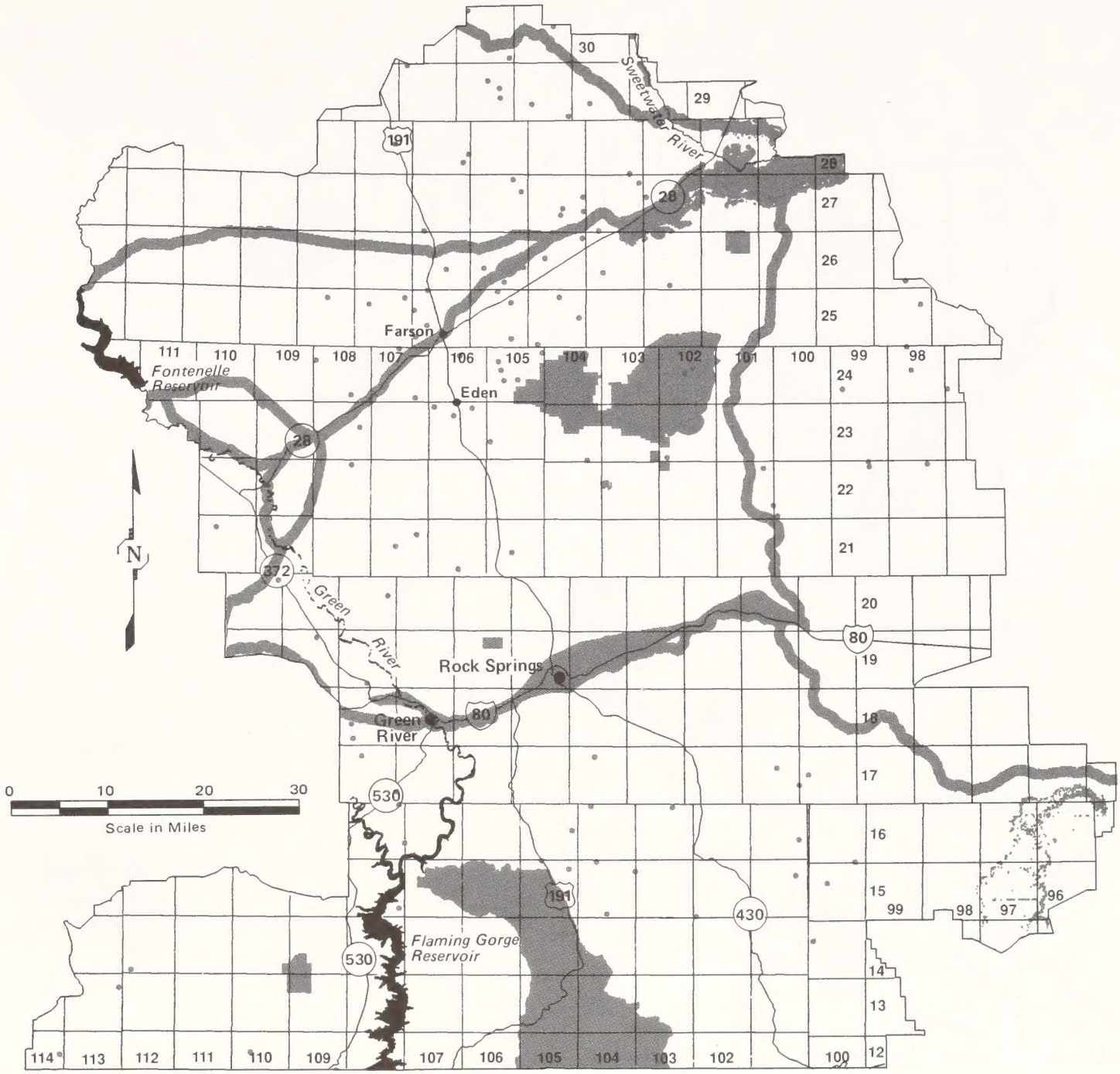
Map 36
Alternative B
Rights-of-Way Exclusion Areas
Green River Planning Area



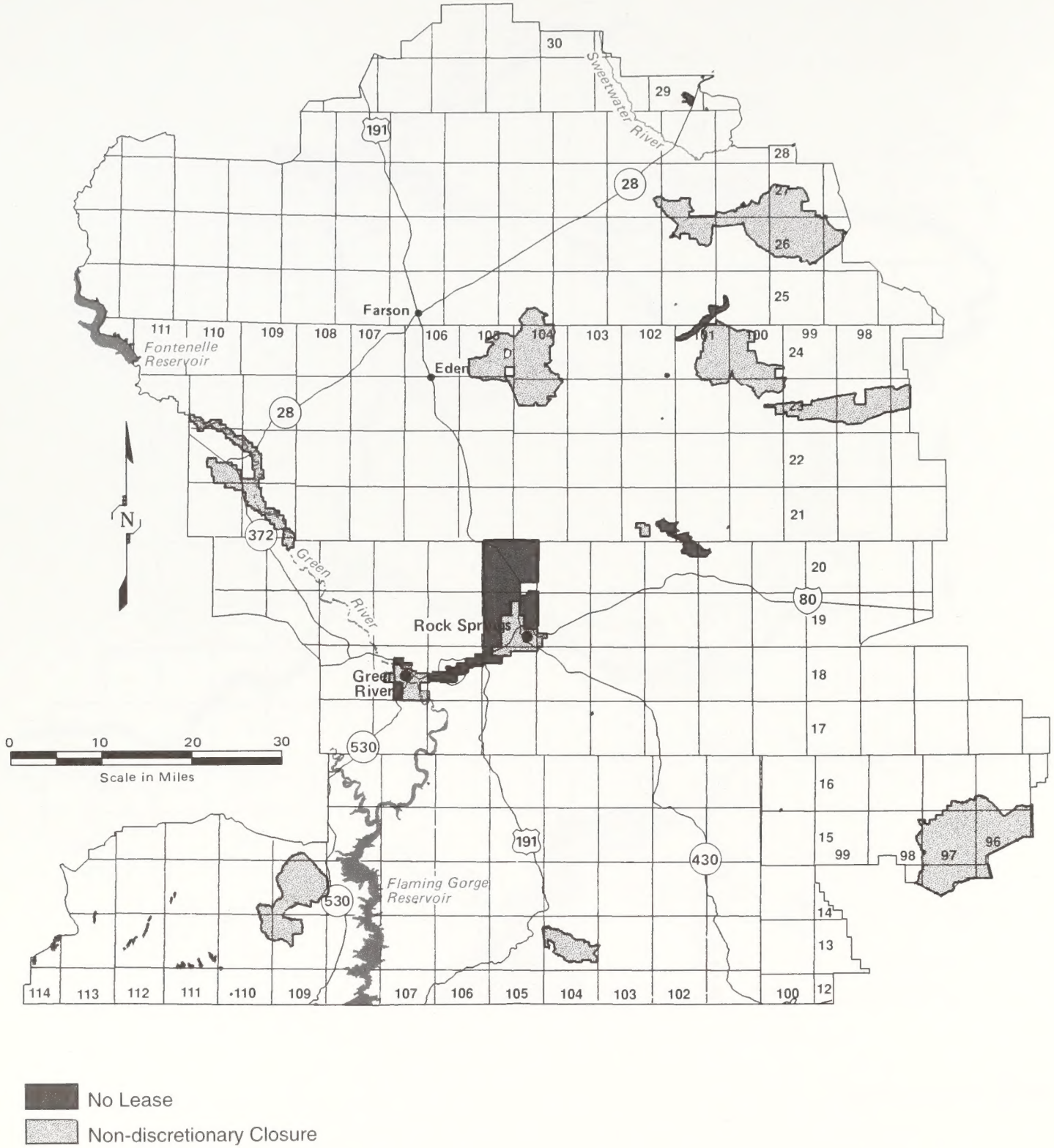
Map 37
Alternative B
Rights-of-Way Avoidance Areas
Green River Planning Area



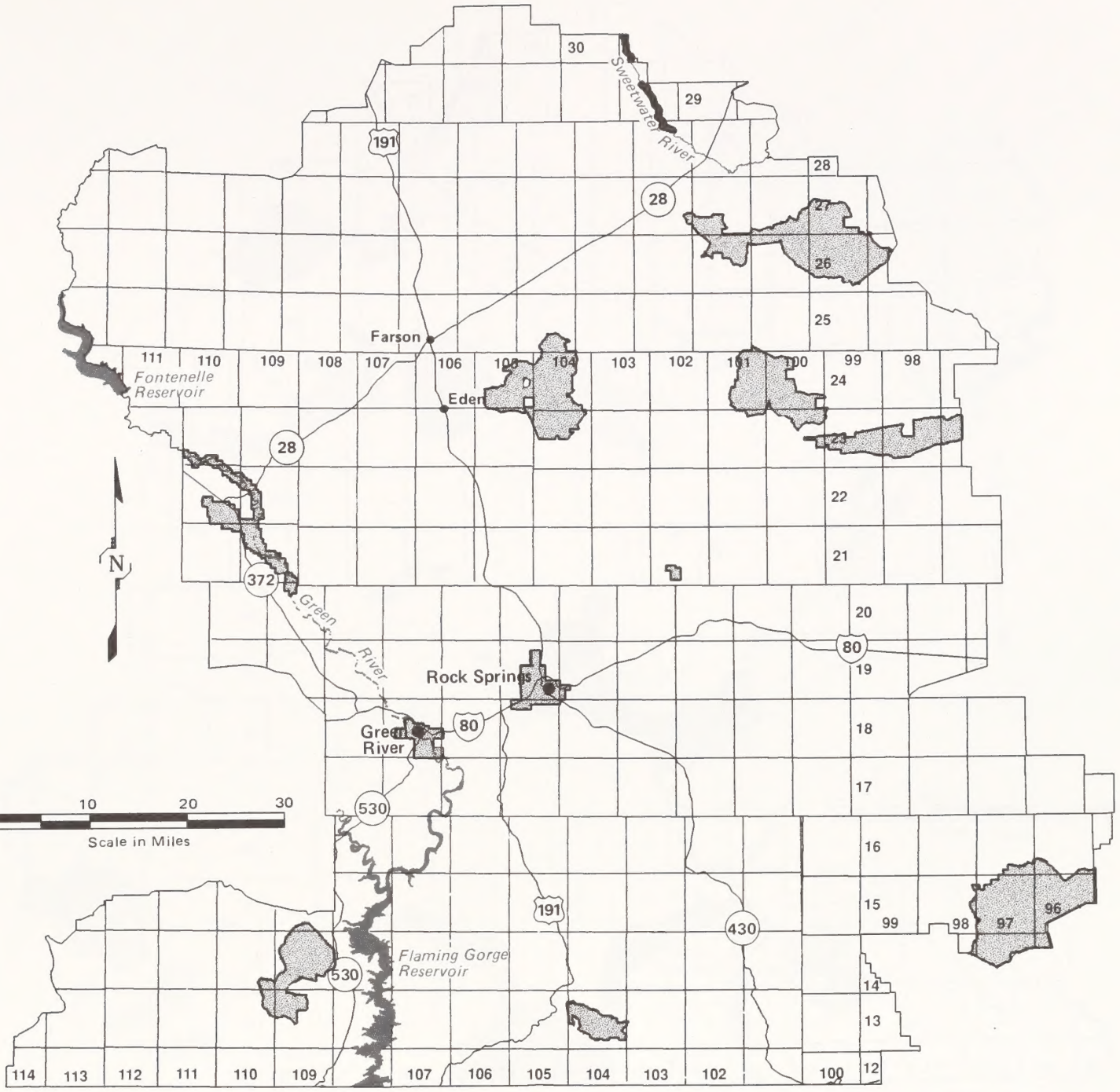
Map 38
Alternative C
Rights-of-Way Exclusion Areas
Green River Planning Area



Map 39
Alternative C
Rights-of-Way Avoidance Areas
Green River Planning Area



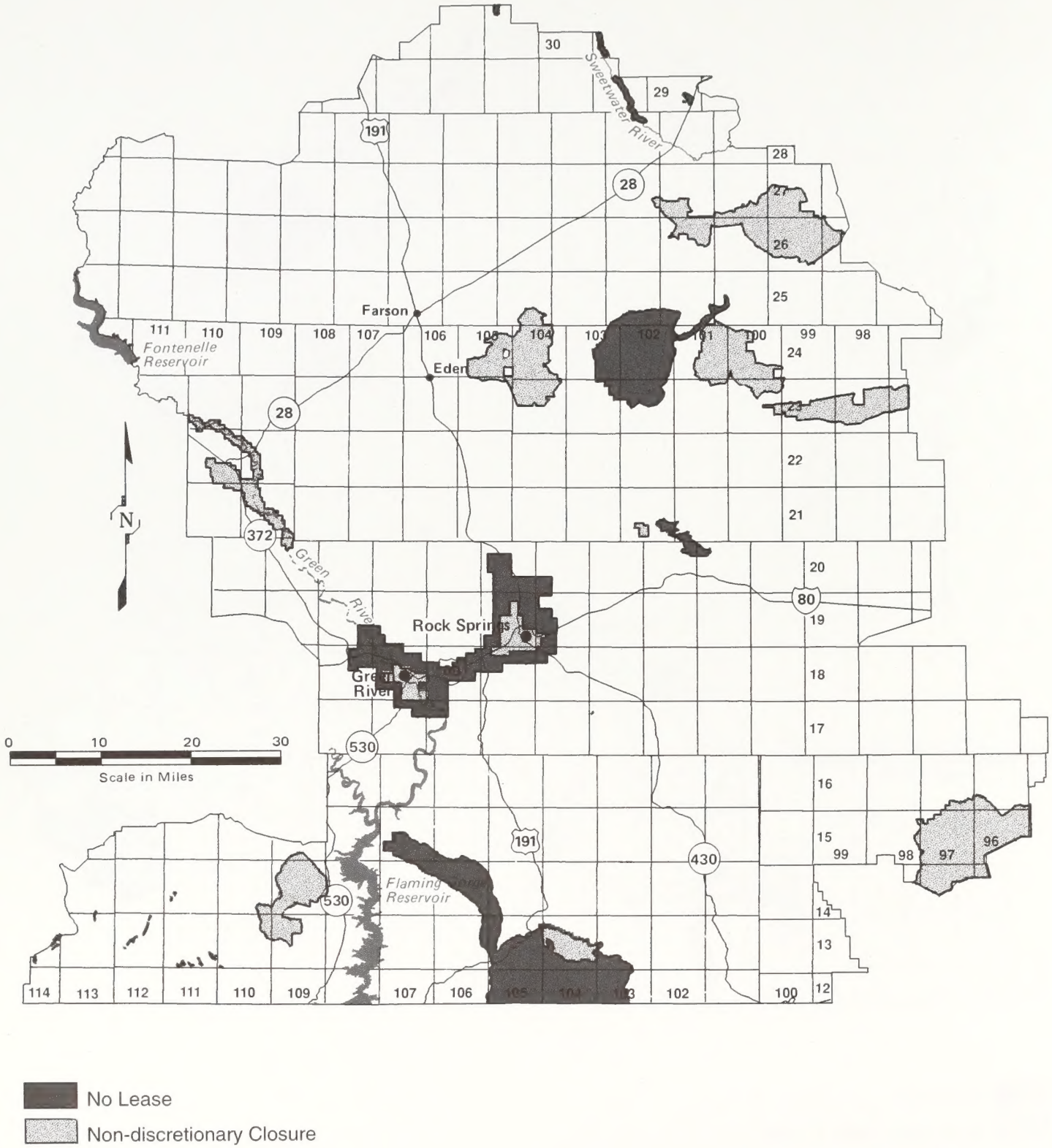
Map 40
Alternative A
No Lease Areas
Green River Planning Area



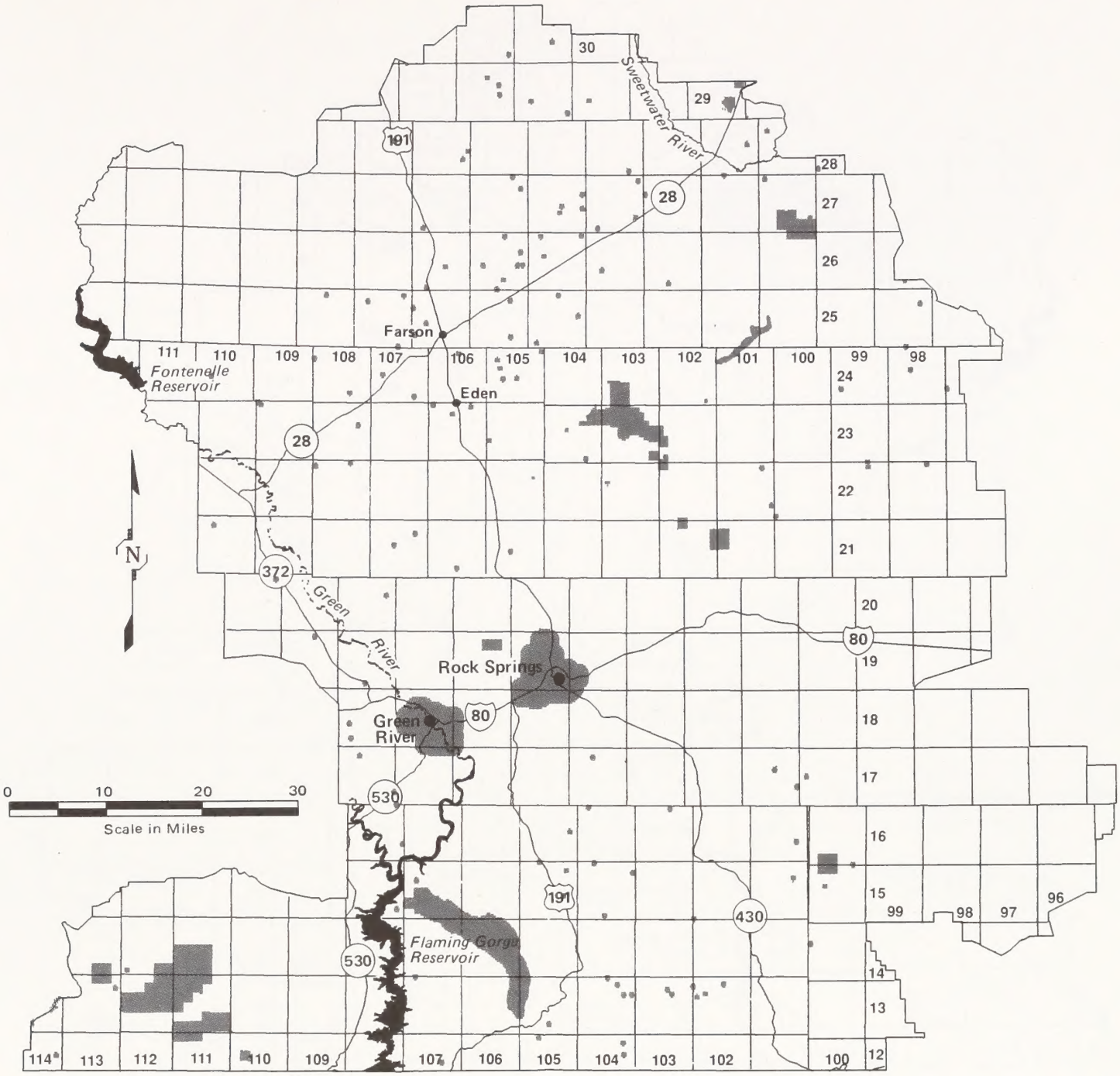
No Lease

Non-discretionary Closure

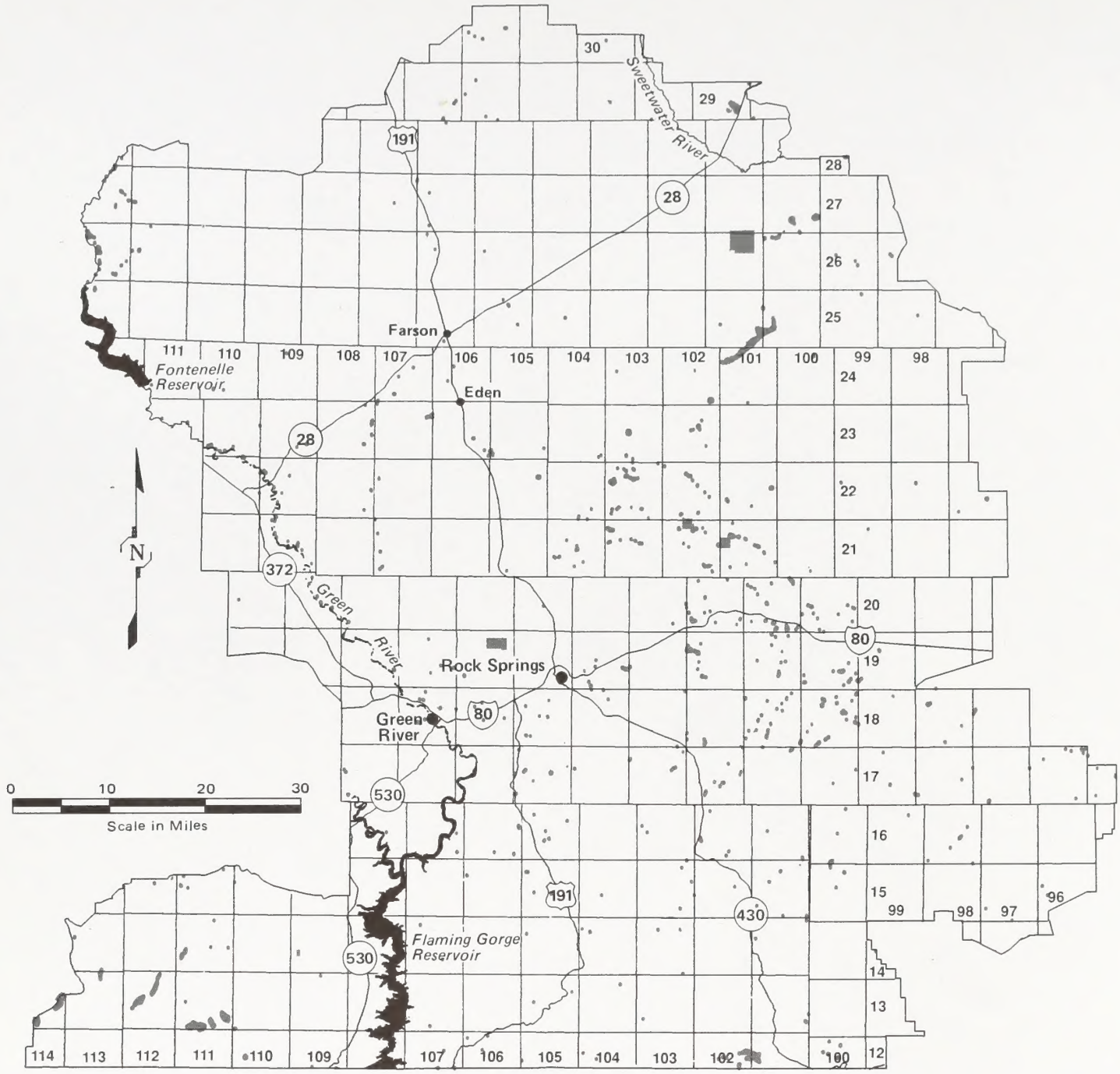
Map 41
Alternative B
No Lease Areas
Green River Planning Area



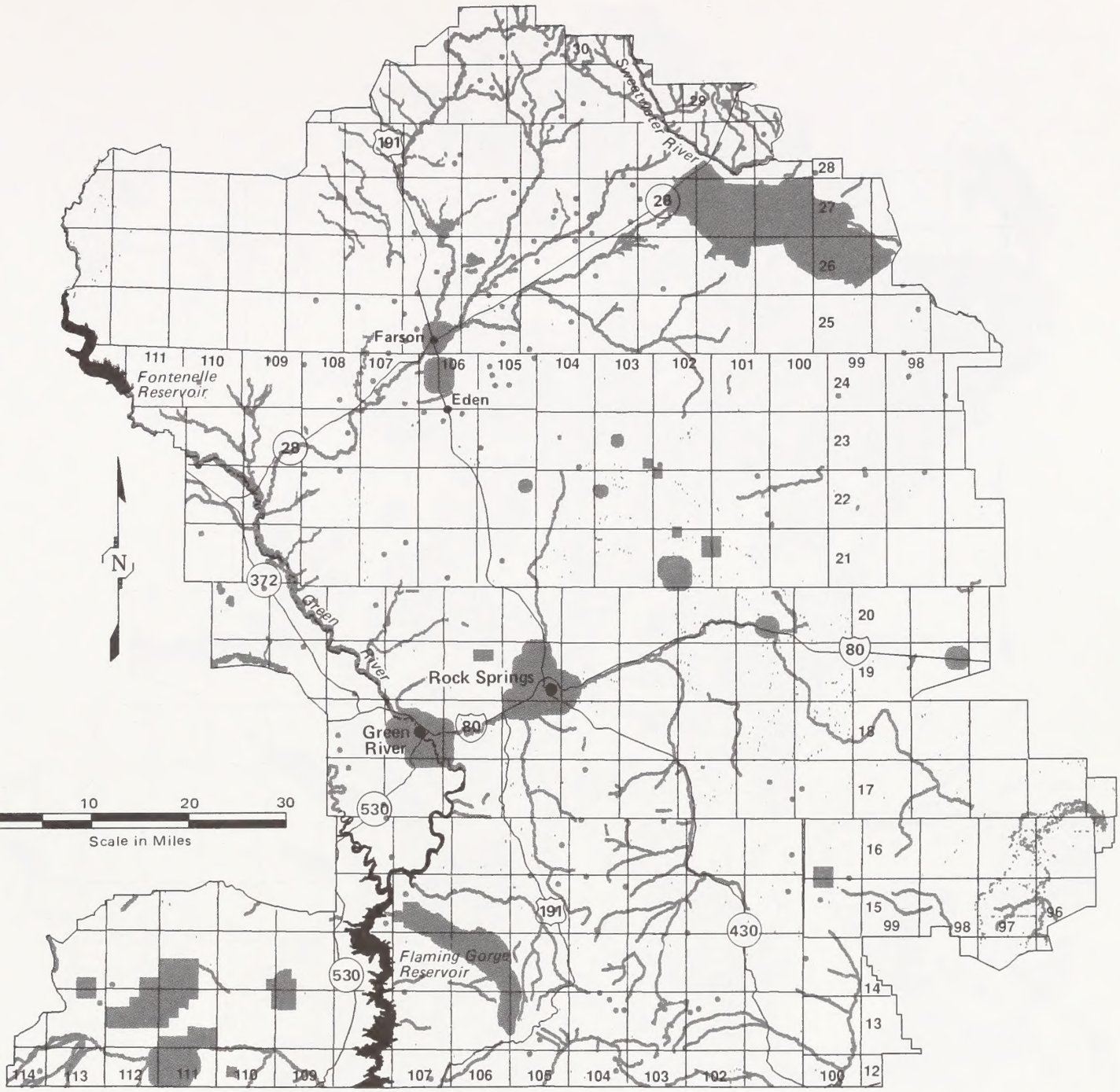
Map 42
Alternative C
No Lease Areas
Green River Planning Area



Map 43
Alternative A
No Surface Occupancy Areas
Green River Planning Area



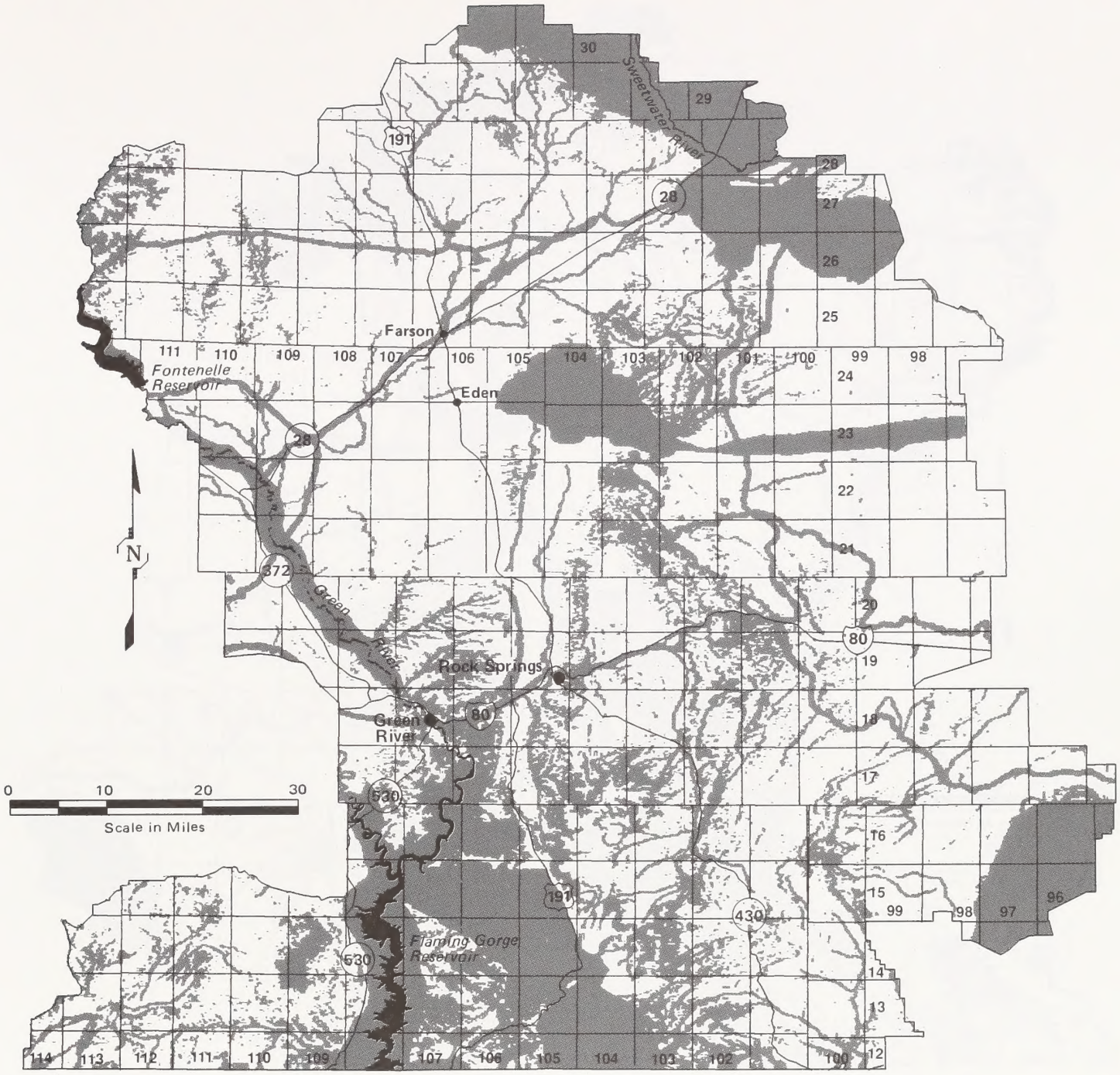
Map 44
Alternative B
No Surface Occupancy Areas
Green River Planning Area



Map 45
Alternative C
No Surface Occupancy Areas
Green River Planning Area



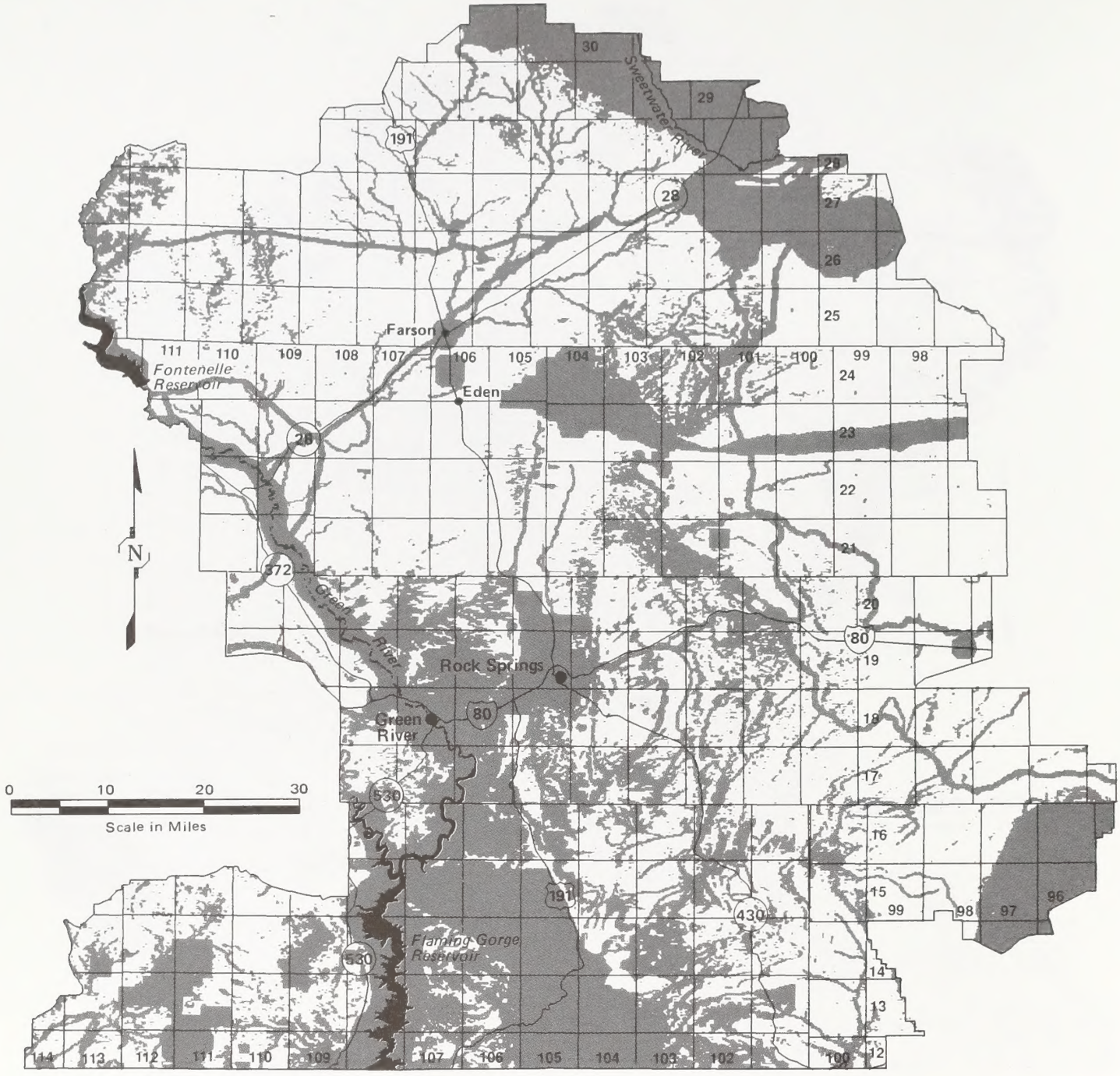
Map 46
Alternatives A and C
Big Game Crucial Winter Range, Lambing Areas, and Parturition Areas
Green River Planning Area



Map 47
Alternative A

Lease with Controlled Surface Use Stipulations

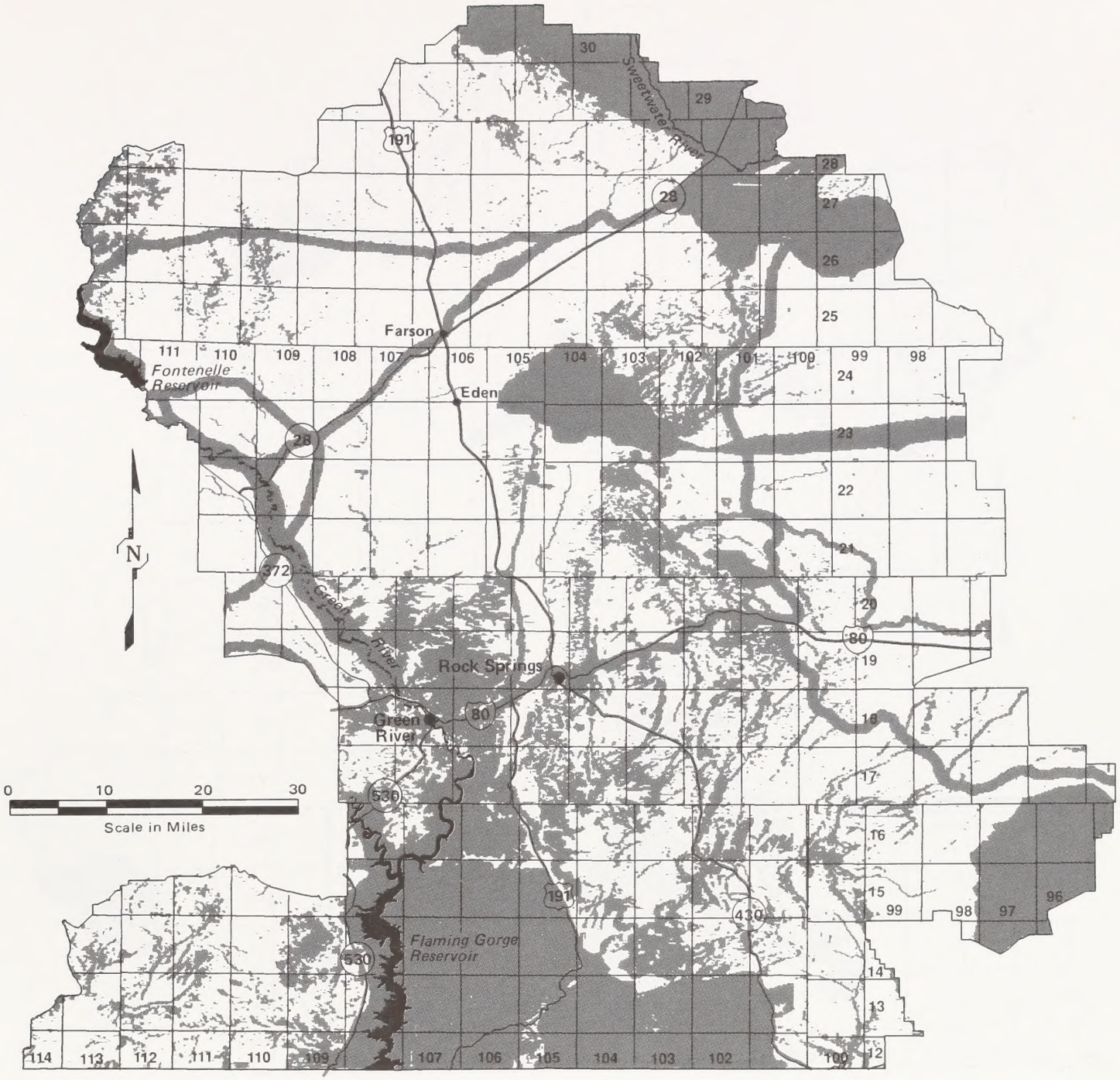
Green River Planning Area



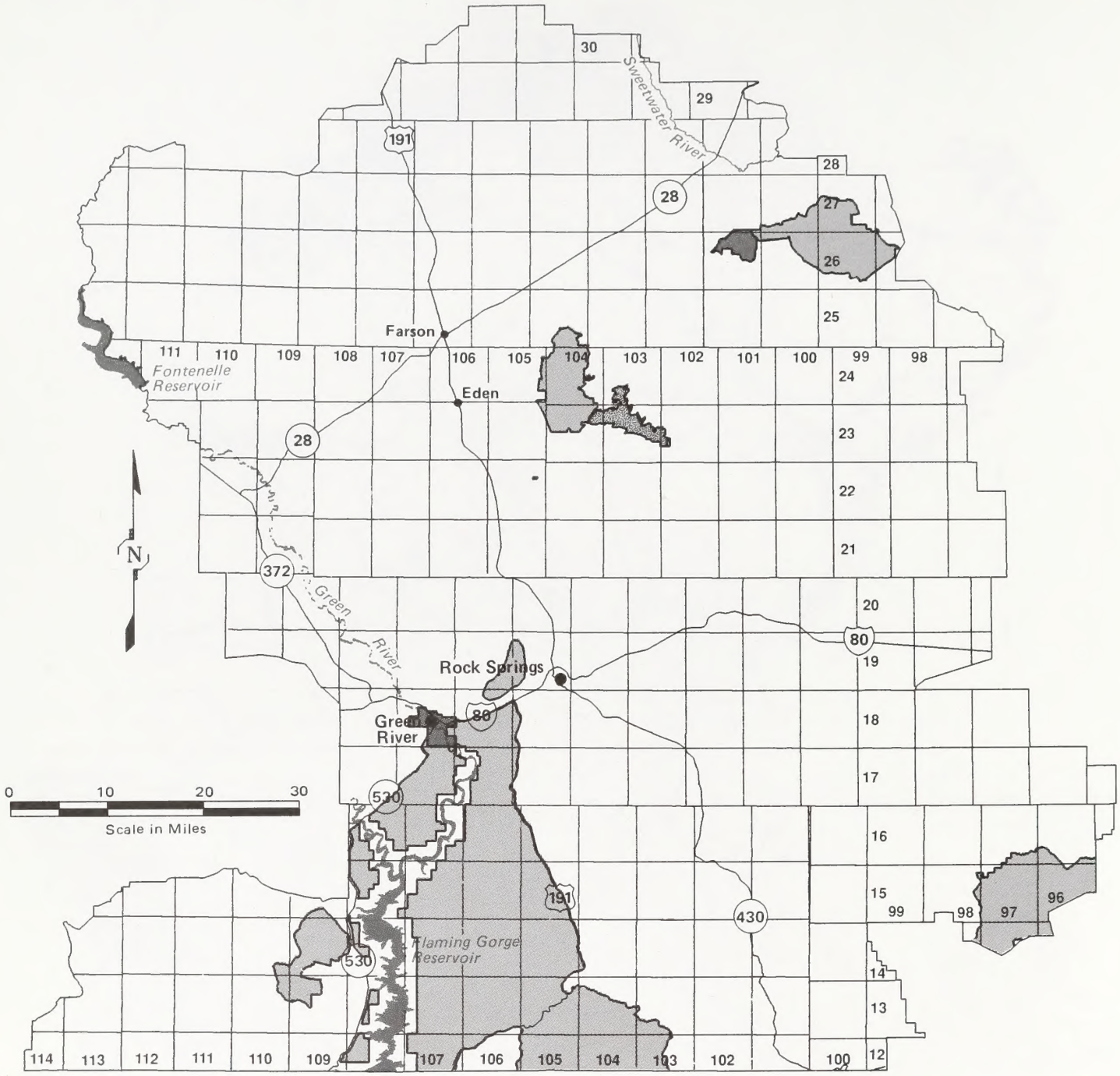
Map 48
Alternative B

Lease with Controlled Surface Use Stipulations

Green River Planning Area



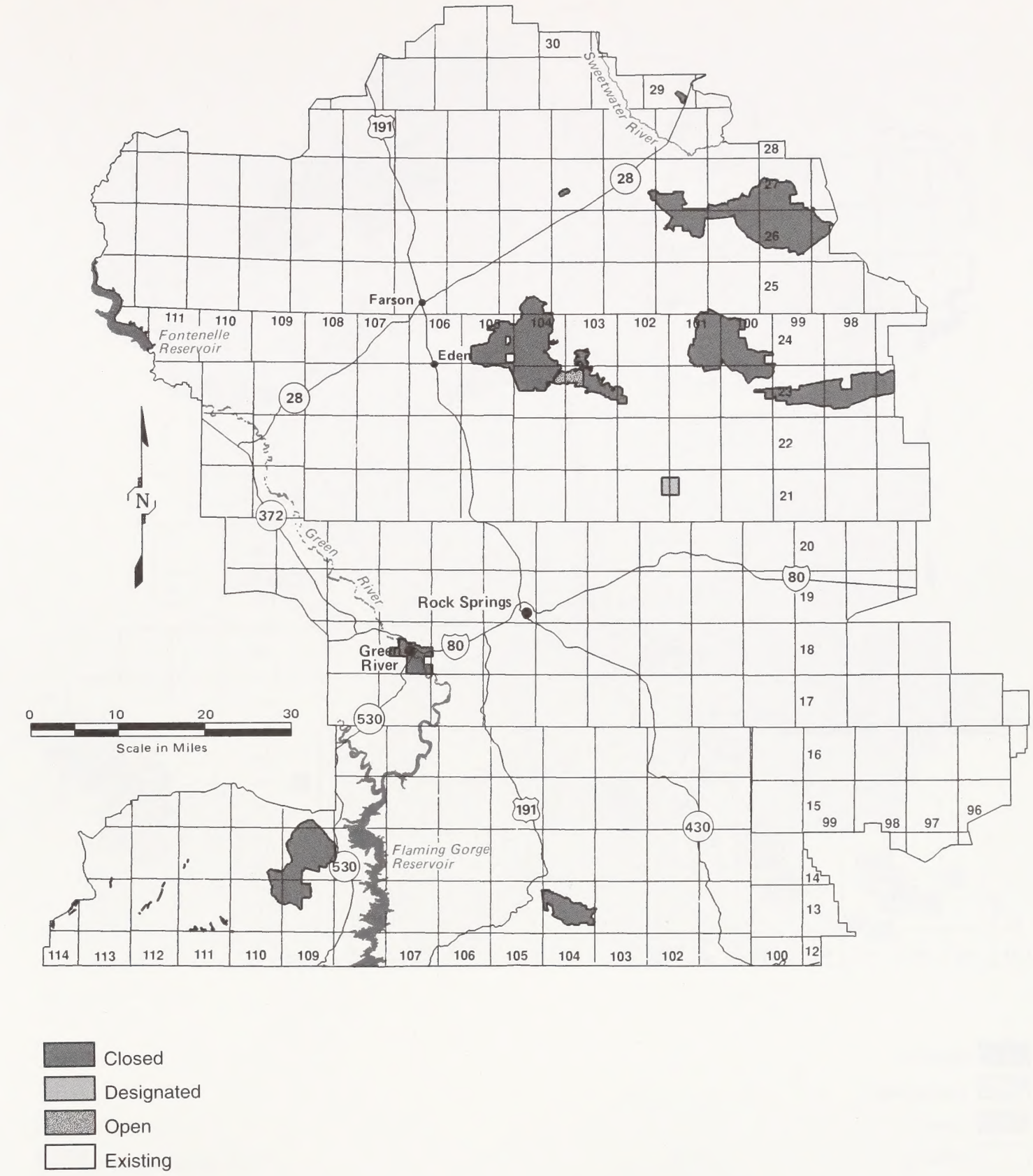
Map 49
Alternative C
Lease With Controlled Surface Use Stipulations
Green River Planning Area



Map 50
Alternative A

Off-Road Vehicle Designations

Green River Planning Area



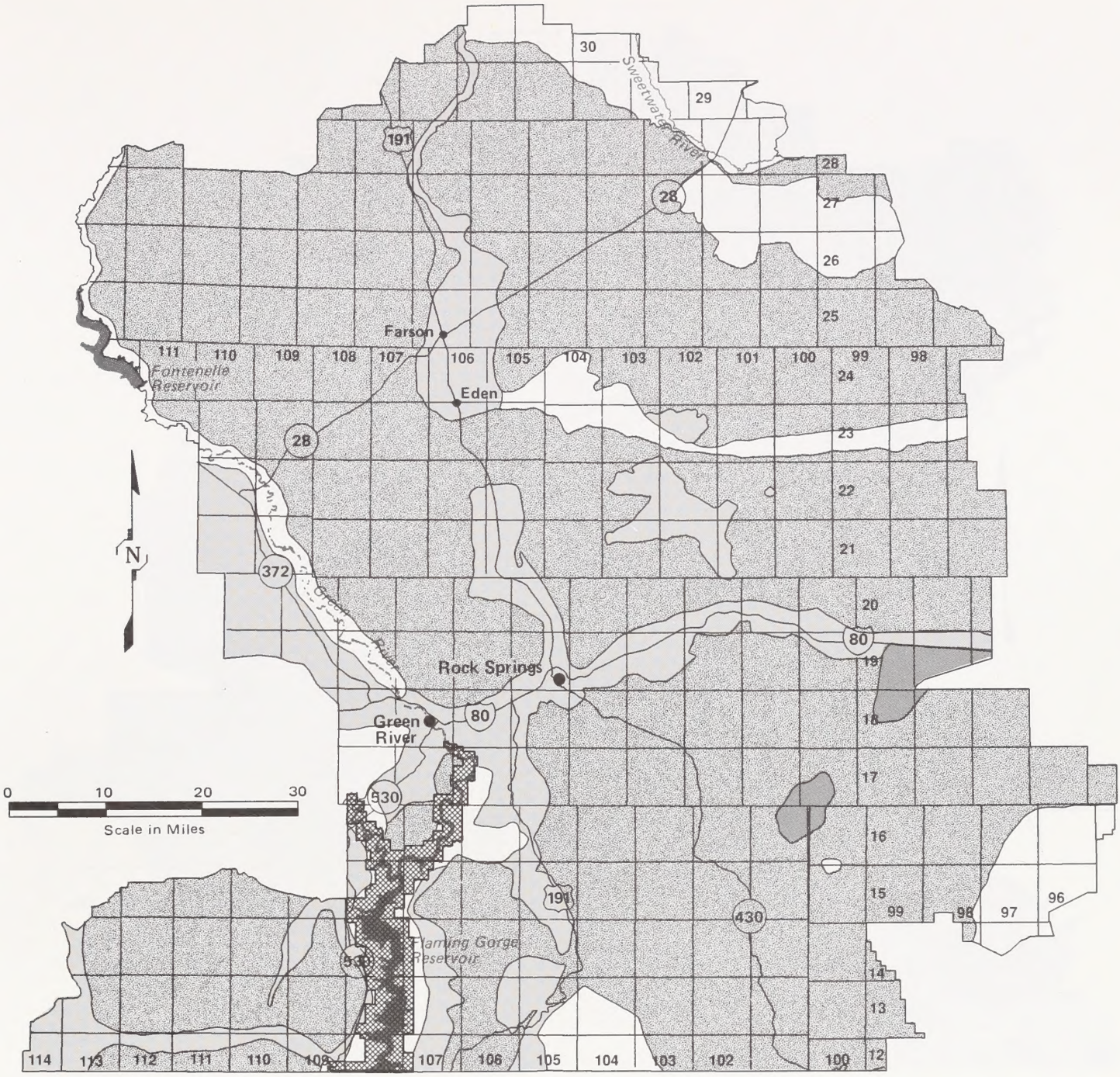
Map 51
Alternative B

Off-Road Vehicle Designations

Green River Planning Area



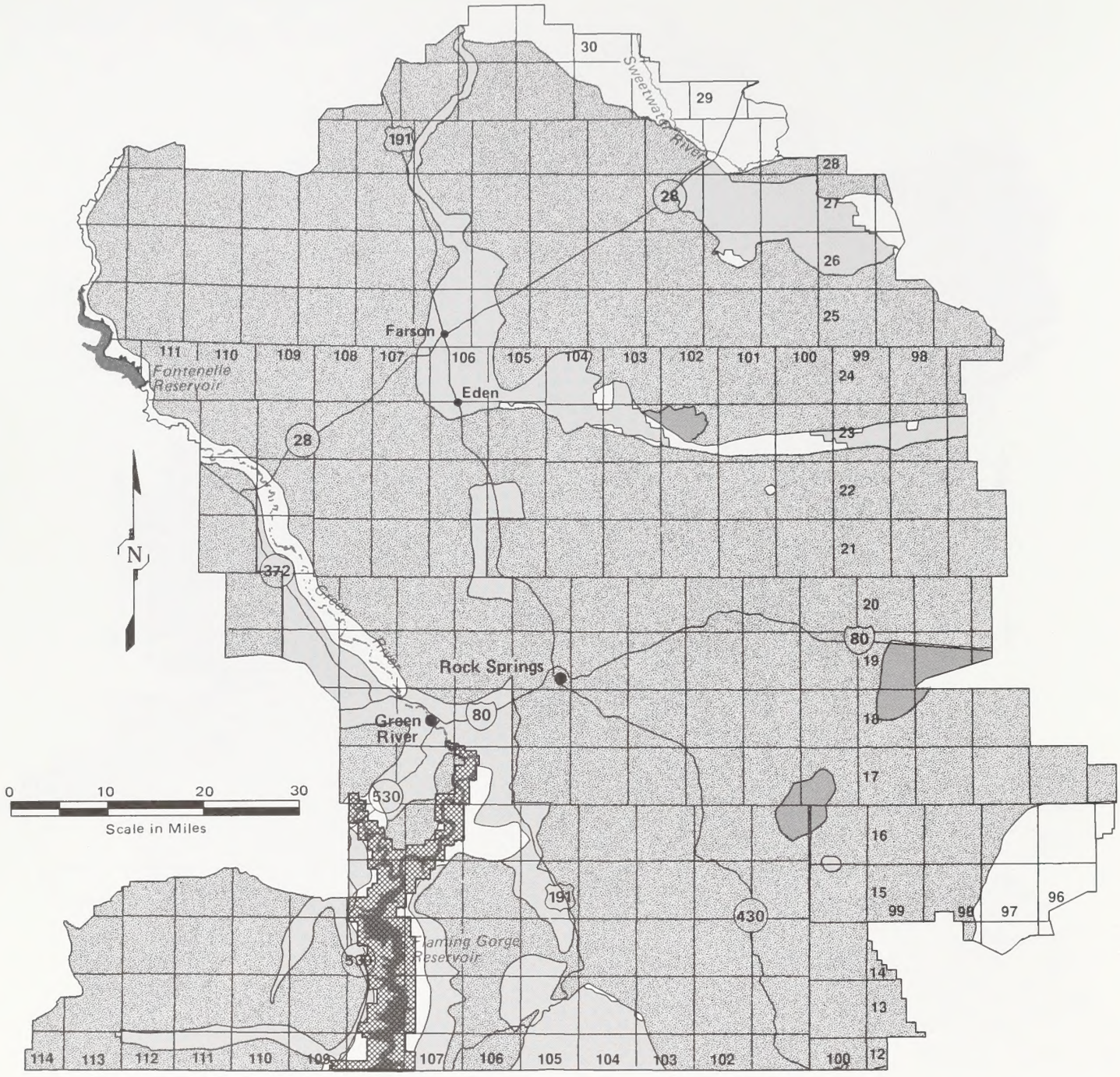
Map 52
Alternative C
Off-Road Vehicle Designations
Green River Planning Area



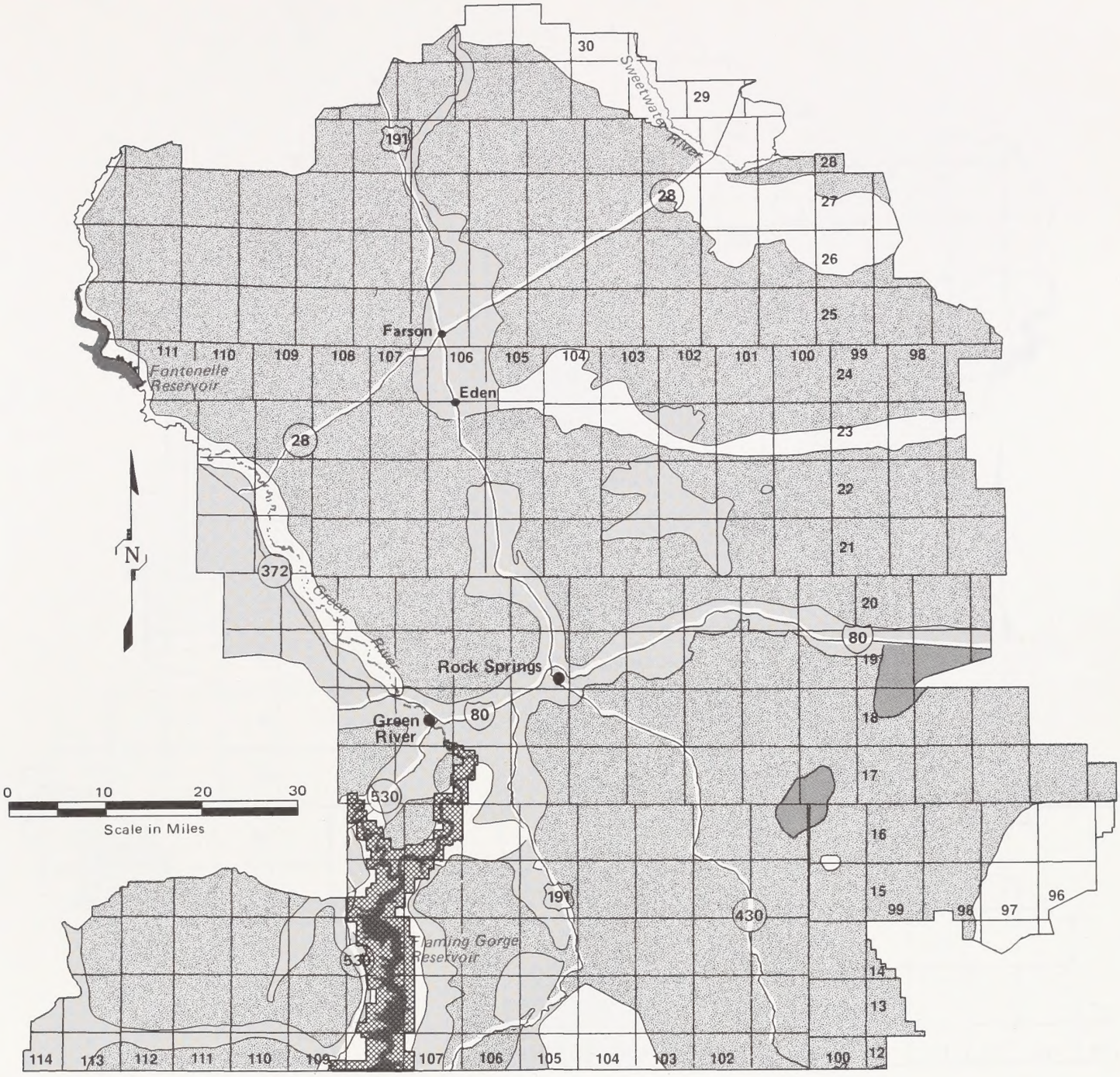
Map 53

Existing Visual Resource Management

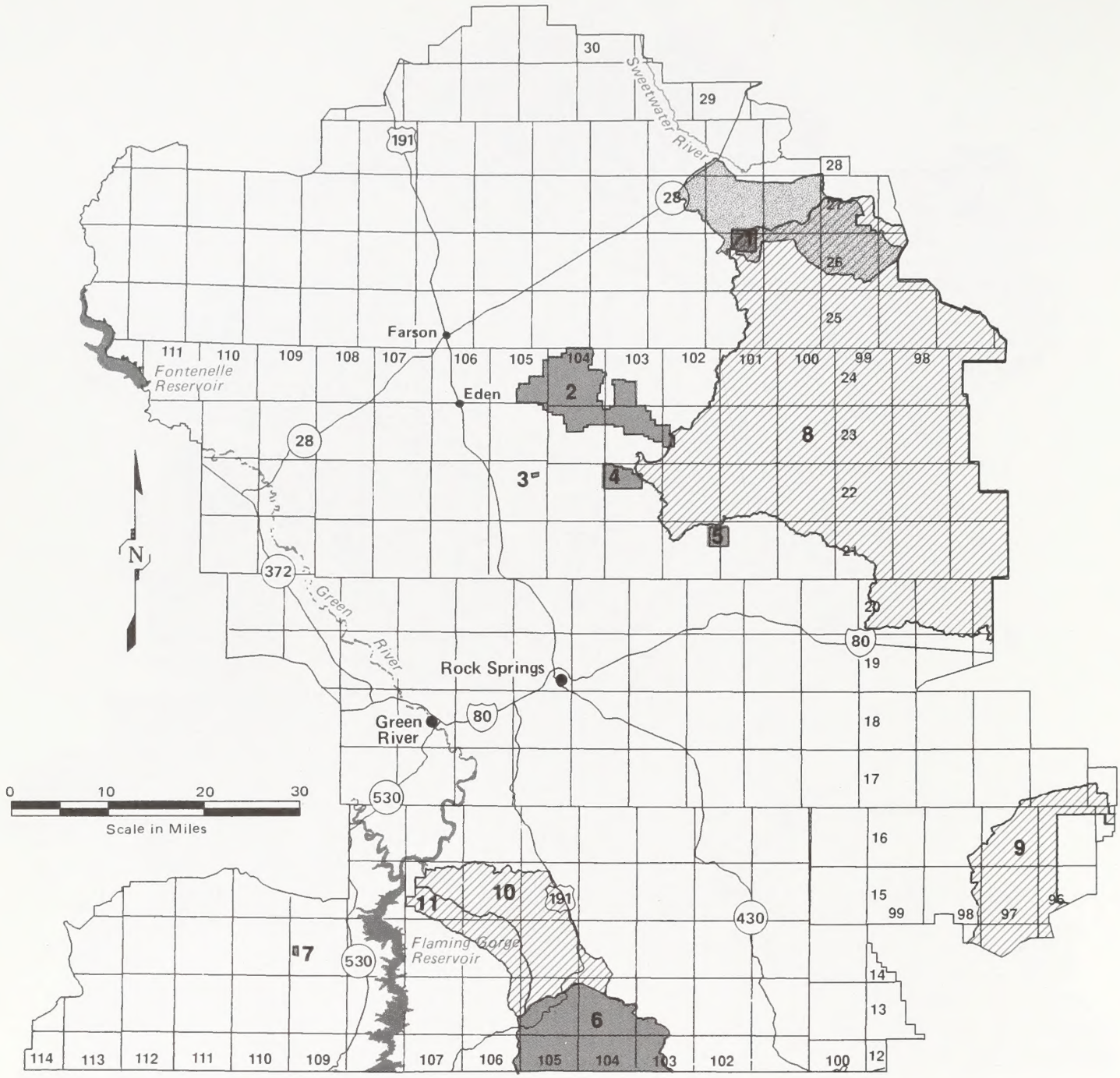
Green River Planning Area



Map 54
Alternative B
Visual Resource Management
Green River Planning Area



Map 55
Alternative C
Visual Resource Management
Green River Planning Area



Existing ACECs

1 Oregon Buttes
2 Sand Dunes
3 White Mountain Petroglyphs
4 Cedar Canyon
5 Natural Corrals
6 Red Creek
7 Pine Spring

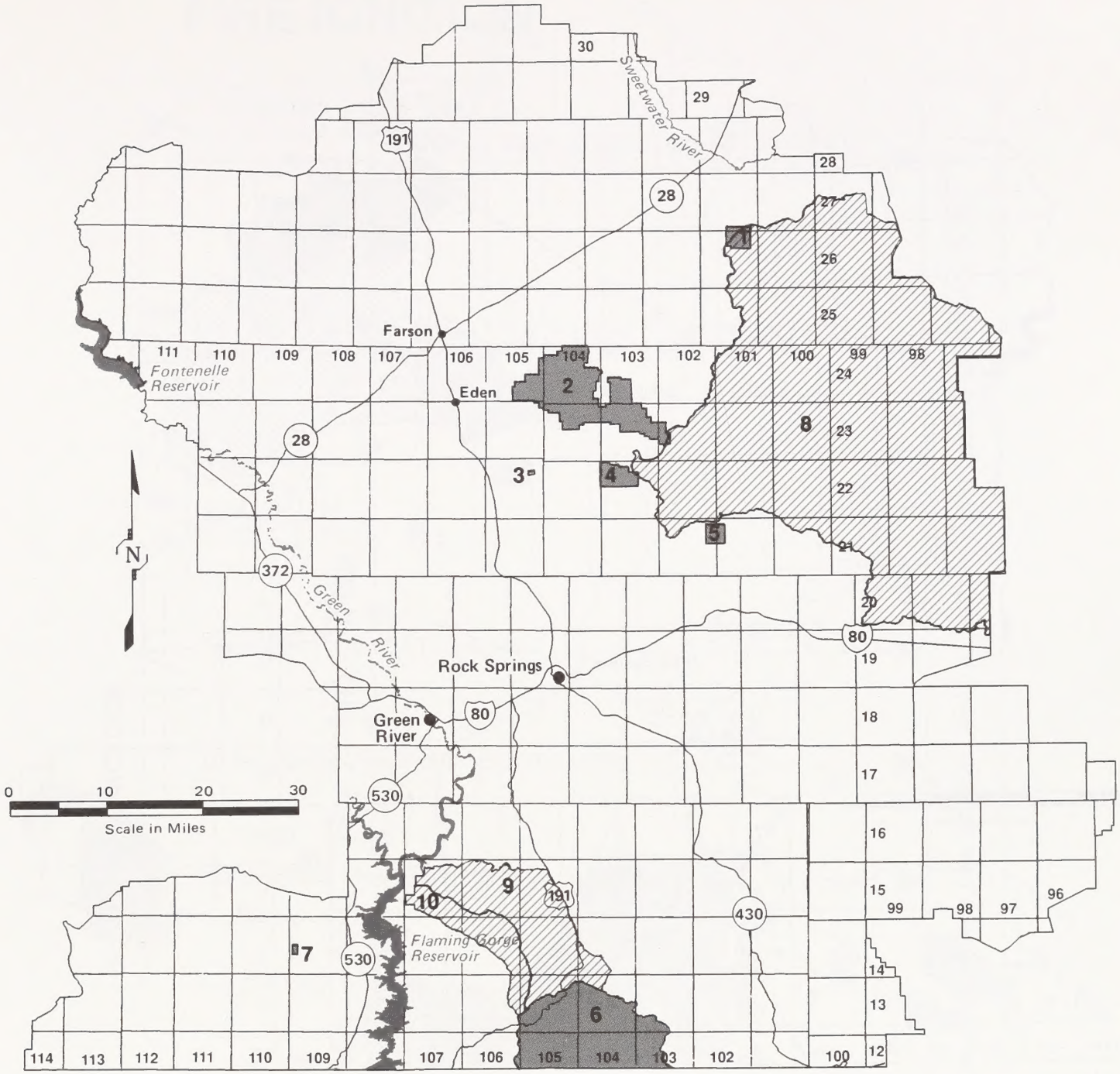
Proposed South Pass Historic Landscape

Other Areas

8 Red Desert Area
9 Monument Valley
10 Sage Creek
11 Currant Creek

Note: Greater Red Creek comprises Currant Creek, Red Creek, and Sage Creek.

Map 56
Alternative A
Special Management Areas
Green River Planning Area



Existing ACECs

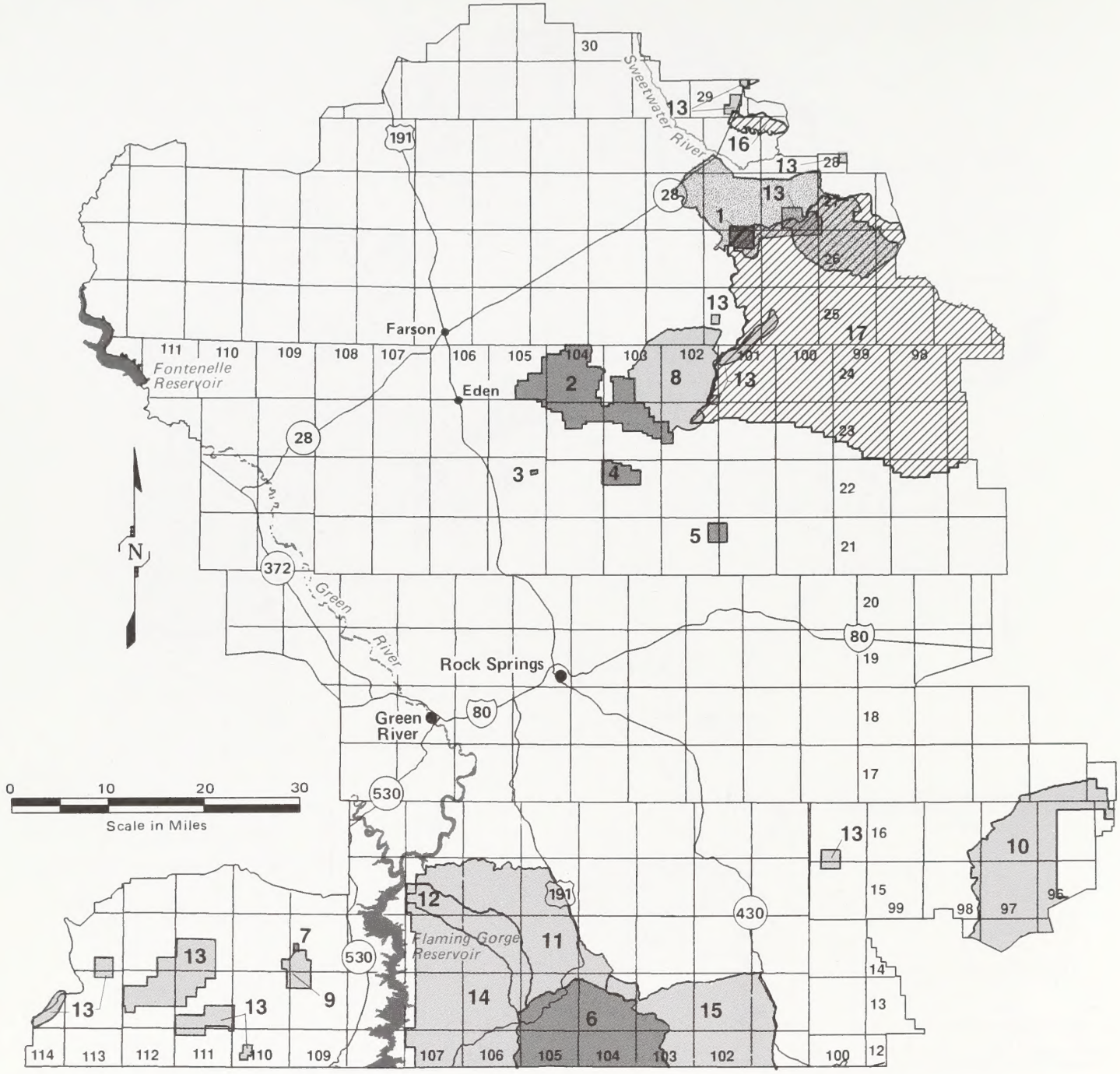
1 Oregon Buttes
2 Sand Dunes
3 White Mountain Petroglyphs
4 Cedar Canyon
5 Natural Corrals
6 Red Creek
7 Pine Spring

Other Areas

8 Red Desert Area
9 Sage Creek
10 Currant Creek

Note: Greater Red Creek comprises Currant Creek, Red Creek, and Sage Creek.

Map 57
Alternative B
Special Management Areas
Green River Planning Area



Existing ACECs
- 1 Oregon Buttes
- 2 Sand Dunes
- 3 White Mountain Petroglyphs
- 4 Cedar Canyon
- 5 Natural Corrals
- 6 Red Creek
- 7 Pine Spring

Proposed ACECs
- 8 Steamboat Mountain
- 9 Pine Spring Expansion
- 10 Monument Valley
- 11 Sage Creek
- 12 Currant Creek
- 13 Candidate Plant Species
- 14 Sugarloaf Basin
- 15 Pine Mountain

Other Areas
- 16 Lander Cutoff
- 17 Red Desert Area

Proposed South Pass Historic Landscape

Note: Greater Red Creek comprises Currant Creek, Red Creek, Sage Creek, Pine Mountain, and Sugarloaf Basin.

Map 58
Alternative C
Special Management Areas
Green River Planning Area

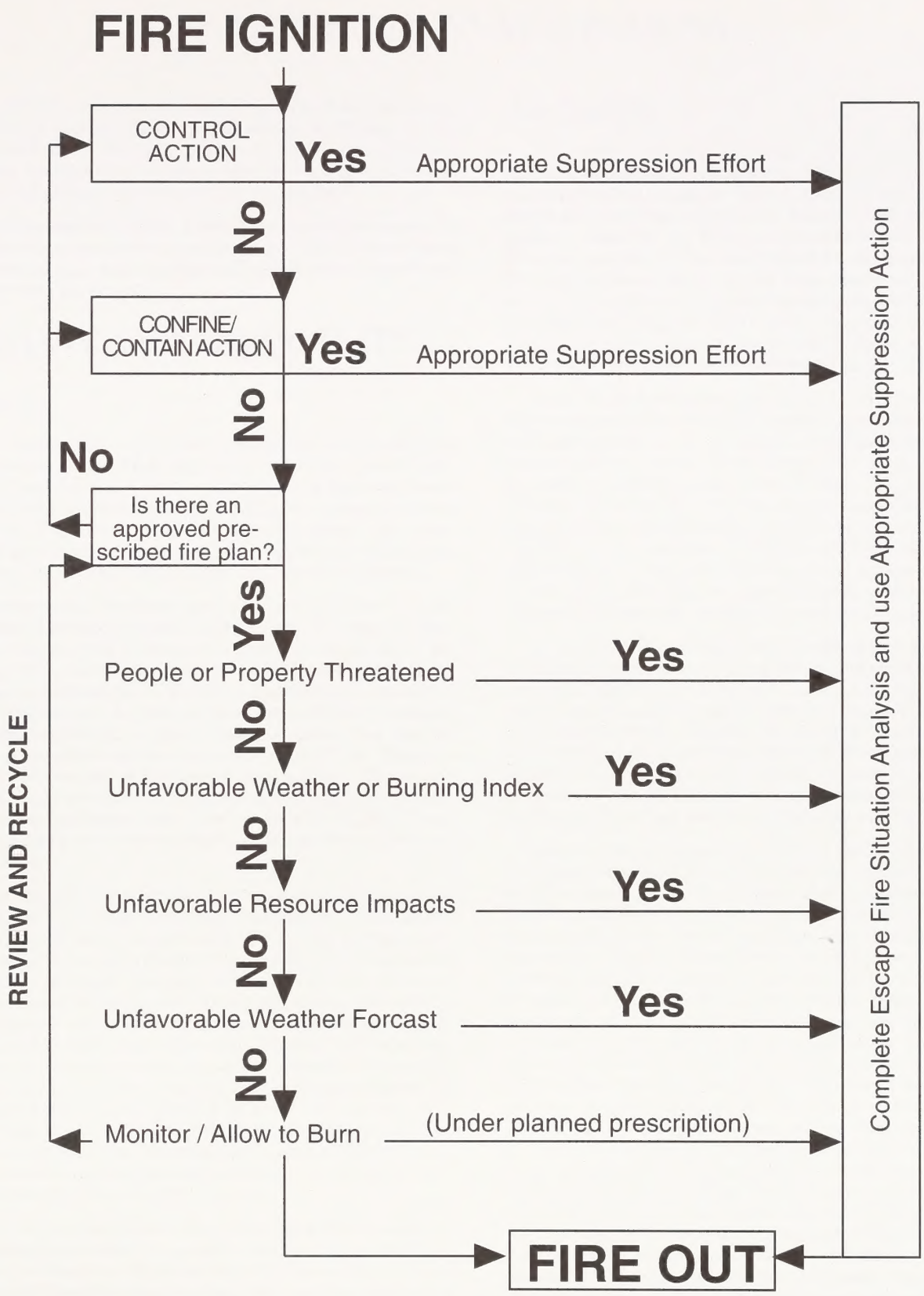


Figure 2

Unplanned Ignitions Fire Decision Chart

Green River Planning Area

CHAPTER 3
AFFECTED ENVIRONMENT

Chapter 3 describes environmental components that influence the resolution of planning issues or that would be affected by the management actions presented in Chapter 2. Environmental components that would not be affected or that are not important to the resolution of planning issues are not covered in detail.

More detailed information about the affected environment is contained in the management situation analysis (MSA) for the Green River planning area and is available for review at the Green River Resource Area Office.

CLIMATE AND AIR QUALITY

Climate

The climate of the Green River planning area is generally dry continental temperate. Most days are dry and sunny, with weather fronts of Pacific origin. Climatic setting varies so that as elevation increases, lower average temperatures and higher average precipitation occur. The lowest central area supports a desert ecosystem. Most of the rest of the area is semi-arid steppe, and surrounding mountains support more lush montane and alpine ecosystems.

Precipitation and temperature are the two most important climatic parameters relating to vegetation growth. Map 59 shows the locations of stations where climate measurements are made in the planning area. According to Martner (1986), the annual mean precipitation for Green River, Wyoming, a location representative of the planning area, is 7.7 inches per year. Approximately 20 percent of this precipitation falls as snow. Peak rainfall is in May, with 38 percent of annual precipitation between April and June. Temperatures can be extreme in both winter and summer. The lowest recorded temperature was -42°F and the highest was 104°F, though the average annual temperature is a rather cool 43°F. Figure 3 shows the annual distribution of temperature and precipitation at the Green River station.

Other climatic factors which affect the ecological setting of the planning area are humidity, evaporation, and growing season length. Relative humidity over this area can be very low and averages about 55 percent. The estimated annual pan evaporation for this area is 65 to 70 inches of water. Pan evaporation indicates the amount of moisture that can be lost by water bodies, soil, and vegetation due to the atmospheric conditions. The growing season in this area is short, making grain production and most other agricultural activities inappropriate, though the resulting grasslands have helped to foster the grazing industry. The frost-free period is a maximum of about 100 days and decreases with elevation to as low as 60 days (Map 60). While winter is long and harsh, severe snowstorms occur less here (about one per year) than further east and in areas of high elevation. Summer thunderstorms are also less frequent in this area of the state, averaging about 30 thunderstorms per year.

Winds in the planning area are predominantly from the west to southwest and can be quite strong. Since this area contains the lowest section of the Continental Divide between Montana and New Mexico, it is a natural funnel for storms crossing the mountains resulting in a corridor of strong winter winds from Rock Springs to Laramie. The average annual wind speed at Rock Springs is 12 mph. Figure 4 is a wind rose which shows the annual proportion of wind speeds and directions which occur in Rock Springs (Rykaczewski, et al. 1980).

Air Quality

Air quality in the planning area is generally excellent with measured background concentrations of all criteria pollutants well below established standards. Criteria pollutant concentrations are measured by the State of Wyoming, Department of Environmental Quality. However, the BLM, in cooperation with the State of Wyoming and the U.S. Fish and Wildlife Service, has established a fine particle measuring site at the Seedskadee National Wildlife Refuge. Figure 5 shows the observations made at this site since its establishment in August 1989. The daily average particulate concentration is 9.6 micrograms/cubic meter with a maximum of 45 micrograms/cubic meter, well below ambient air quality standards.

Other air quality related values such as visibility and acid deposition are monitored by the BLM. Visibility was measured for 5 years at Chicken Springs (near the Sand Dunes Wilderness Study Area) using photodensitometry. As can be seen from Figure 6, visibility in this area is generally greater than 70 miles. Fine particles are considered to be the main source of visibility degradation. With the low particulate concentrations measured in this area, very good visibility is to be expected. With particulate levels so low, a given increase in particulate concentrations causes a greater percentage change in visibility than the same increase would cause if the background particulate concentration were much higher.

Acid deposition is measured near Pinedale as part of the National Acid Deposition Program/National Trends Network. Figure 7 shows seasonal sulfate and nitrate deposition at this site. Deposition rates of 10 kilogram/hectare/year for sulfate and 15 kg/ha/yr for nitrate are considered potentially damaging to vegetation. Measured deposition rates are much lower than these threshold values. Other acid deposition sites are maintained by the BLM and U.S. Forest Service in western Wyoming; some information has been summarized from the Bridger-Teton National Forest (Galbraith, et al. 1992).

Criteria pollutants, applicable National and Wyoming Ambient Air Quality Standards, and background concentrations are given in Table 3-1. In addition to the ambient air quality standards, major new sources or modifications must comply with the New Source Performance Standards and Prevention of Significant Deterioration (PSD) regulations. The New Source Performance Standards are specific emission standards based on the individual facility to be built, and thus not amenable to consideration in the planning process (when one is not sure what type of development might occur). The PSD regulations, on the other hand, are concentration increments in attainment areas. Unlike the National Ambient Air Quality Standards which are absolute values not to be exceeded more than once per year, the PSD standards are increments or increases above existing background conditions, no matter how low this background is. This serves to keep areas which have very good air quality from being degraded to the National Standard. The PSD increments are not the same for all areas of the country. Each location is designated either PSD Class I, II, or III. The PSD increments are given in Table 3-2. Class I areas (Yellowstone National Park, Grand Teton National Park, Teton Wilderness Area, Washakie Wilderness Area, North Absaroka Wilderness Area, Bridger Wilderness Area, Fitzpatrick Wilderness Area, and Savage Run Wilderness Area (a State Class I area)) have the smallest increments and were originally designated in the 1977 amendments to the Clean Air Act. All the rest of the United States was designated as Class II. Class III requires a redesignation from Class II and has the highest increments. Currently, all BLM-administered lands are designated Class II. However, there are Class I areas near BLM-administered lands in southwest Wyoming which might affect developments.

While the BLM does not have any PSD Class I areas in the planning area, other areas are of concern in terms of air quality impacts. The most important of these are wilderness areas, wilderness study areas, and non-attainment areas. The Wilderness Act of 1964 indicates that wilderness areas and wilderness study areas are to be maintained in their natural state. Federal land managers have an affirmative duty to protect these areas from deterioration of air quality from human-caused sources, which is frequently cited as a factor in wilderness character. Map 4 indicates the locations of BLM wilderness areas and wilderness study areas in the planning area.

Non-attainment and maintenance areas are those where the National Standards are currently or in the past have been violated. Any increase in pollution levels in these areas must be offset by a decrease in another source. In the planning area, the only non-attainment areas have been due to the annual Total Suspended Particulate standard being exceeded. These areas are shown in Map 61. Since the TSP standard was replaced by the fine particulate (PM-10) standard, the status of these areas as non-attainment is uncertain. The State is in the process of taking measurements to determine if the PM-10 particulate standards are being exceeded. Until that determination is made, the areas will continue to be treated as non-attainment.

The BLM, U.S. Fish and Wildlife Service, and State are cooperating to monitor particulates at a site in the Seedskadee National Wildlife Refuge. This site is of importance to assess potential reduction in visibility, which federal land managers such as the BLM must address under the PSD regulations as an air quality related value.

The most important non-criteria pollutant of concern in the planning area is hydrogen sulfide, a contaminant of natural gas. This poisonous gas can cause a significant safety risk if it is released during an emergency event (e.g., well blowout or pipeline rupture). Wells containing hydrogen sulfide are shown on Map 62.

CULTURAL RESOURCES

Cultural resources in the planning area can be divided into three categories: 1) prehistoric sites, 2) historic sites, and 3) historic trails. Prehistoric sites are the most common and range in time from at least 12,000 years Before Present (B.P.), and possibly much older, to the advent of EuroAmerican contact in the 17th century. Historic sites are evidence of the earliest EuroAmerican-Native American contact in the Fur Trade era, followed by the emigration period, early settlement and ranching, communication and railroad networks, and early resource extraction including mining and oil production. Historic sites also include sites of particular interest due to the ethnic diversity they represent.

Approximately two-thirds of the cultural resources in the planning area are prehistoric archeological sites. These properties represent a wide range of human activities. Many of the sites are surface manifestations of hunter-gatherer campsites. Other sites are buried and represent several stratigraphically superimposed remnants from such campsites. The term campsite generally implies that the site has one or more fire hearth features that likely served as the center of human activities over two or more days. Campsites usually also have a patterned scattering of chipped stone artifacts and sometimes have pottery, bone or other materials left behind by the prehistoric inhabitants. Stone circle, or tipi ring, sites are evidence of a special type of campsite. Stone circle sites are rare in southwestern Wyoming, although common in eastern Wyoming and on the Great Plains. Stone circle sites in this Great Basin setting are especially significant.

The most common site types in the planning area are limited activity locations. They include places where plant resources were gathered and/or processed, or animals killed or butchered. These sites usually have specialized kinds of artifacts indicative of the activity that took place there. Still other limited activity sites (called lithic scatters) consist only of a scattering of chipped stone debris from making and repairing stone tools. The specific function of these sites sometimes is difficult to ascertain. However, improvements in archeological methods and theory are making the ubiquitous lithic scatter a more informative cultural resource.

Another rather common site type in the Green River Basin is the stone material quarry or source area. Outcrop and lag gravel exposures of excellent quality chert and quartzite rocks served as a source of stone tool materials for ancient people. There are places in the Green River Basin, where stone procurement sites cover several square miles. These resources were apparently of tremendous importance to prehistoric people. These procurement sources are important components of the prehistoric record; however, they are so pervasive as to seem less significant than other prehistoric site types.

The planning area also has a few sites of mass big game kills that are of special scientific interest. These sites sometimes have lines of stone piles, known as cairns, that facilitated guiding animals to the associated entrapment/kill site. In some cases, there are specialized ritual sites associated with big game hunting. To completely understand big game hunting traditions, it is necessary to preserve not only the actual kill site but also these ancillary facilities. The rarity of mass kill sites in the planning unit makes them a resource in need of specialized management.

There are also other stone cairns and stone alignments that may have had some function other than as a hunting feature. These sites are little understood and should be protected at least until we can better understand their role in the lifeways of prehistoric people.

The planning area also has at least one source of soapstone that could be carved into bowls, pipes, etc., by prehistoric people. This material, known as steatite, was important for both utilitarian and ceremonial purposes.

Prehistory

The prehistoric human occupation of southwestern Wyoming can conveniently be divided into three phases, the PaleoIndian Period, the Archaic Period, and the Late Prehistoric Period, each characterized by specific adaptive strategies and technologies. Projectile points characteristic of each of these time periods are illustrated in Figure 8.

PaleoIndian Period

The PaleoIndian Period covers the time range from about 12,500 to 8,000 years B.P. During this time, people entered the new world apparently by way of an ice-free corridor across the Bering Strait and extending onto the present-day Great Plains of North America. There is mounting evidence that this was not the first migration of people into North America from Asia via the Alaskan and Siberian Peninsulas (Bryan 1986), but following the last of the great ice ages, people apparently entered the new world in sufficient numbers to establish a permanent foothold.

Pre-Clovis

No pre-Clovis (older than 12,500 years) cultural manifestations are known in the planning area. However, there are numerous sites that have only an assemblage of simple flakes and flake tools scattered across the surface or within a buried component. The possibility exists that one or more of these locations could be a pre-Clovis site where all other evidence has long since decomposed. In

several cases organic features discovered in pipeline trenches in southwestern Wyoming have produced radiocarbon dates in the 18,000-year-old range. These features are an intriguing phenomena that may prove to represent a pre-Clovis cultural manifestation.

Clovis

The earliest documented cultural manifestation in the new world is known as the Clovis Culture. Clovis sites date from 11,500 to just over 12,500 years ago. Although no intact Clovis components have been discovered in the planning area a number of artifacts have been found on the surface indicating a strong possibility that Clovis sites will be found in the planning area.

Goshen

Recently, a potential post-Clovis and pre-Folsom cultural complex, known as Goshen, has been identified at the Hell Gap site in eastern Wyoming, and at the Mill Iron Site in southeastern Montana (Frison 1988). The Krmpotich site, in the planning unit, is a Goshen site presently being researched by archeologists from the University of Wyoming.

Folsom

The Folsom cultural tradition is just slightly younger than Clovis but does not seem to have been derived from it. Folsom sites range in age from about 10,500 to 11,000 years B.P. Frison (1978) mentions two Folsom localities in the planning area—the Morgan Site in the Red Desert north of Rock Springs and a site on private property south of Rock Springs. Neither of these sites has been extensively investigated and no radiometric dates exist for them. There have also been a number of Folsom points discovered as surface occurrences in the planning unit. These examples demonstrate that important Folsom-aged resources exist in the planning unit.

Late PaleoIndian Traditions

Evidence for several Late PaleoIndian cultural traditions is much more plentiful in the resource area than is evidence from earlier cultures.

The "type site," or original location site, for the Eden projectile point is the Finley Site located in the planning area near Eden, Wyoming. This site was first investigated in the 1940s by scientists from the University of Pennsylvania. They determined that Finley was a kill and butchering site for *Bison antiquous*, an extinct buffalo species known to be about half again larger than modern buffalo.

The Pine Springs Site, investigated by archaeologists from the University of Utah in the 1960s (Sharrock 1966), is another well known late PaleoIndian site in the planning area. Artifacts from the deepest occupation level at Pine Springs may represent a variant of the Agate Basin Late PaleoIndian tradition although they date to about 11,800 years ago which seems to be considerably older than most Agate Basin components. This date was obtained from bone collagen and is considered questionable by Sharrock (1966) who postulates that the component is simply an Agate Basin variant and dates to the same age as other Agate Basin manifestations, i.e., 9,000 to 10,000 years B.P. Archeologists have recently expressed renewed interest in the research potential of the Pine Springs site.

The Deadman Wash Site, east of Rock Springs, produced a Scottsbluff PaleoIndian component. Scottsbluff spear points have characteristic stemmed haft elements and they date to about 8,500 years ago. The Scottsbluff component only occurred within a small portion of the excavation at Deadman Wash. It is not known if more extensive PaleoIndian-aged cultural materials exist at Deadman Wash. The Deadman Wash site was excavated within a data recovery mitigation context associated with pipeline construction; therefore, research was restricted to the right-of-way corridor. The potential for additional archeological work to be conducted at the site is very good.

Archaic Period

The term "Archaic" implies a broad range of subsistence practices based on a variety of plant and animal food use, as opposed to the focus on big game typical of the PaleoIndian periods. The onset of the Archaic cultural tradition in the intermountain west is thought to correspond generally with the climatic change that represents the break between the Pleistocene and Holocene geological ages.

During the early stages of the Archaic Period, people apparently developed a greater reliance on plant foods. Consequently, plant gathering achieved a status equal to that of hunting. Changes in subsistence practices resulted in concomitant changes in the prehistoric tool kit which makes up most of the archaeological record today. The large finely made projectile points of the PaleoIndian were replaced with considerably smaller spear and atlatl dart points which usually had either corner or side notched bases to facilitate hafting into a foreshaft. The quality of workmanship of Early Archaic points is quite variable with some rivalling those of the PaleoIndian in fineness, while others are rather crude. Equally important, stone grinding slabs used to process plant foods became increasingly well made during the Archaic Period.

Early Archaic

The Early Archaic cultural period ranges from about 7,500 years B.P. to roughly 4,500 years B.P. Early Archaic occupation of the Green River Basin has been documented by recent research at several sites. The Deadman Wash site produced radiometric dates ranging from 6,800 to 5,500 years B.P. Several other Early Archaic sites are known in the planning unit.

Middle Archaic

The lifeways which began during the Early Archaic intensified during the Middle Archaic between 4,500 and 2,500 years ago. Whenever an adaptive process intensifies, it is assumed that the ecosystem was relatively stable. Probably the prehistoric artifact most commonly found in the planning area is one of the several variants of Middle Archaic atlatl dart point. Furthermore, nearly every stratified archaeological site excavated in the planning unit has had one or more well-developed Middle Archaic components. This evidence may indicate an increased population during this environmentally stable period. It could also represent better geological preservation of Middle Archaic components than earlier archeological materials.

Housepit features were found in Middle Archaic-aged deposits at the Maxon Ranch and Sweetwater Creek sites. These features probably indicate year-round occupation of intermontane basin environments.

During the Middle Archaic, it becomes possible to differentiate between artifact assemblages that seem to be associated with Great Plains cultures and those from the Great Basin. The abundance of Middle Archaic archeological materials and the convergence of plains and basin environments make the planning unit an ideal place to study a wide variety of research questions about this period of North American prehistory.

Late Archaic

The Late Archaic is characterized by the arrival of two distinctive atlatl dart point styles known as Pelican Lake and Besant. Both of these Plains corner-notched dart point types are found in the planning area. These styles are not always easily distinguished from the ubiquitous Elko-point styles assumed to have originated in the Great Basin. Here again, the convergence of Plains and Basin cultural manifestations is evident and remains a research question to be further explored.

Although several archaeological components excavated in the planning area have produced radiometric dates within the range of the Late Archaic period (2,500 - 1,500 years B.P.), none seems to have been a pure cultural component from that period. At the Deadman Wash site for instance, Components 8 and 9 produced Late Archaic dates as well as dates and diagnostic projectile points from both the Middle Archaic and Late Prehistoric components (Armitage, et al. 1982). This situation is likely the result of periodic occupation of sites over great spans of time. It may also be partly a result of geological preservation of certain topographic settings that were protected while other locations were destroyed by erosion.

Late Prehistoric Period

The Late Prehistoric Period began about 1,500 years ago and ended in about 1650 A.D. when European cultural items began to arrive in the Green River Basin. Two important innovations in the Late Prehistoric Period were the introduction of the bow and arrow, and pottery into the intermountain west. Atlatl dart technology continued to be used but the bow and arrow expanded the range of hunting techniques available to hunter at this time. The specific differences and comparative uses of bow and arrow versus atlatl technology are beyond the scope of this overview but are well discussed by Frison (1978:223-224). Suffice it to say that the bow and arrow allowed more effective exploitation of upland regions within the basins and may have changed the seasonal subsistence round of basin inhabitants. Pottery allowed more effective storage of foods and a broader range of food preparation options. Pottery also was occasionally decorated and thus may have been related to culture group recognition.

Roughly a third of the radiometric dates recovered from excavated components in the planning unit fall into the Late Prehistoric Period.

During the Late Prehistoric Period improved climatic conditions allowed bison herds to increase. Bison could be taken either with atlatl and dart, or with bow and arrow. Buffalo were sometimes trapped in arroyos, or caught in corrals or other trap arrangements. Thus the Late Prehistoric hunter was expertly equipped to take advantage of this increase of available biomass. It would probably be wrong, however, to imply that bison became the major food source in the Green River Basin at this time.

Although more bison may have been used during the Late Prehistoric than during most of the Archaic Period, antelope were the most substantial food source in the Green River Basin. Since the basin's sagebrush environments were more suited to antelope than to buffalo, antelope became easy prey for prehistoric hunters. Hunters armed with short bows and arrows designed to accommodate smaller arrowpoints could stalk antelope in interdunal areas or they could drive them into corral facilities in more open country.

Despite the large numbers of bison and antelope used by aboriginal peoples in the Green River Basin throughout the past 10,000 years, it is likely that more caloric energy was derived from harvest of cottontail rabbits, jack rabbits (hares), and ground squirrels than was ever obtained from large game animals.

Digging sticks used to harvest roots were undoubtedly used during all prehistoric times, although only in a few rare instances in other regions (the Big Horn Basin and Utah's Great Basin cave sites) have digging sticks been found in archeological sites. The open environment of the Green River Basin was generally not conducive to preservation of such perishable items.

Historic Period

Roughly a quarter of the known cultural resources in the planning unit are historic sites. Some of these sites such as Dug Springs, LaClede, and Big Timber are stations associated with the historic trail network. Sites are also associated with many other historic contexts. For instance, there is evidence of the early fur trade era and of the frontier military at several locations in the planning unit. Railroading history is represented by Camp Carmichael and several other railroad construction and maintenance sites. The mining industry is associated with sites including the Gunn Mine and Townsite which is partially on BLM-administered land. Ranching is evident at the Crookston Ranch site which is recommended for special management, and by numerous livestock grazing campsites of a rather ephemeral nature. Early development of fluid minerals is exemplified in South Baxter Basin and in the Clay Basin region.

Management plans exist for the major historic trails in the planning area. The National Park Service, in cooperation with the BLM and state agencies, developed a plan for the Oregon and Mormon Pioneer National Historic Trails. That plan is the basis of BLM management of those nationally significant trails. The California Trail and the Pony Express route are in the same general area as the Oregon Trail and have recently been designated as National Historic Trails by Congress. A cultural resource management plan for the historic Overland Trail was approved in 1986. Management of the Overland Trail is similar to that of the Congressionally designated National Historic Trails since it is of similar historical significance, theme, and era.

The Cherokee Trail, which is in the general vicinity of the Overland Trail (Map 5), has not been systematically studied, and no plan for its management has been written. Several other historic trails are known in the planning unit, including the Rock Springs to Brown's Park Road, the Point of Rocks to South Pass Freight Road, roads to the South Pass gold fields from Green River and Bryan, and the road from Fort Bridger to the Uintah Agency in Utah. These and other roads that were developed after the Transcontinental Railroad was built are known as Expansion Era roads.

There are about two dozen rock art sites in the planning unit, including five with several panels and over a hundred individual motifs. These sites are extremely important archeological resources and are also valuable in Native American efforts to revitalize their culture and religion.

There is a strong association between playa lakes, sand dunes, and evidence of prehistoric habitation in southwestern Wyoming. There are three especially prominent examples of this association in the planning area: the Blue Forest Area approximately 24,640 acres; Blue Point Playas approximately 3,200 acres and Adobe Town Rim Playa approximately 1,280 acres (Map 5). The density of archeological sites in these areas increases from the usual 4 to 6 sites per section to something over 20 sites per section. A limited amount of archeological research indicates that dunal areas surrounding playa lakes have been intensively occupied at least for the past 4,000 years. Scientific understanding of this settlement pattern is an important issue in prehistoric studies.

Several specific archeological sites in the planning unit have been identified by research archeologists and other scientists. Those sites

will be the focus of ongoing research in the coming years. Those sites include the Eden-Farson, Finley, Pine Springs, Krmpotich, and Morgan sites, and the Bozovich site complex.

The importance of features such as Boars Tusk, Sage Creek Mountain, and the North and South Table Mountains area, lies in the association between cultural resources and unusual geographic features which seem to have attracted considerable attention of Native Americans for the past several millennia. This association of peoples and places is important to the understanding and appreciation of past humans-land relationships as well as religious beliefs and ritual behavior. Spiritual leaders of the Shoshone Tribe have indicated an interest in these unique geographic landforms.

Historic development of southwestern Wyoming includes several other identifiable ethnic groups. Chinese workers were important in the early coal mining industry. Japanese workers were employed maintaining track along the Union Pacific Railroad. Irish emigrants comprised most of the workforce building the railroad. Cornish and Finnish miners helped open the coal mines and also worked in stone quarrying operations. Around the turn of the century mining operations began to attract a score of different nationalities including Welshmen, Scots, Italians, Greeks, Slovaks, Slovenians, and virtually every other nationality in Europe. Finally, Basque sheepherders have long been instrumental in the livestock industry in the area. This melting pot atmosphere is exemplified today in the cultural diversity of Rock Springs and all of southwest Wyoming.

Paleontology

Southwestern Wyoming has been known to vertebrate paleontologists for nearly 150 years. In 1856, Dr. John Evans, passing through the area on his way to join in the geologic exploration of the 46th and 49th parallels, collected fossil fish from near what is now the town of Green River. Other 19th century paleontologists and geologists who collected in the area include F.V. Hayden, John Wesley Powell, Clarence King, L. Lesquereaux, F.B. Meek, Edward Drinker Cope, O.C. Marsh, and H.F. Osborn. More than a century of collecting has by no means exhausted this area's potential for providing new information to paleontologists; the BLM continues to issue collecting permits to paleontologists doing original work in southwestern Wyoming.

Cretaceous Period

Rocks in the Green River Resource Area occur on the flanks of the Rock Springs Uplift and near the Wyoming/Utah state line. Several formation have produced significant fossils. A member of the Hayden Survey expedition discovered (*Agathaumus silvestris*), the first horned dinosaur found in Wyoming (Cope 1872). Other Cretaceous vertebrate, invertebrate, and plant fossils found in the Lance Formation on the Rock Springs Uplift include palms, sharks, bony fish, amphibians, turtles, lizards, dinosaurs, crocodiles, and mammals (Breithaupt 1982). The Mesaverde Group and Fox Hills Sandstone contain marine fossils such as ammonites, fish, and mosasaurs.

Paleocene Epoch

The Fort Union Formation crops out on the flanks of the Rock Springs Uplift and near the Wyoming/Utah state line. Only a few exposures of the Fort Union Formation have been examined by paleontologists; even so, a number of localities where fossil mammals occur are now known (Novacek 1977, Winterfeld 1979). There are unpublished reports of fish, crocodile, and turtle remains from the Fort Union Formation. The Carnegie Museum and the State University of New York at Geneseo are conducting research on the Fort Union Formation. The University of Wyoming, Carnegie Museum of Natural History, University of California-Berkeley, and the University of Colorado Museum also have collections from the Fort Union Formation in the Green River Resource Area.

Eocene Epoch

Outcrops of the Wasatch, Green River, Bridger, and Washakie Formations all occur in the Green River Resource Area, and are all known to contain vertebrate fossils.

Wasatch Formation The Wasatch Formation is exposed in the Great Divide Basin, and around the margins of the Green River and Washakie Basins. Both lower vertebrate and mammal remains have been discovered in the Wasatch Formation. Early descriptions of fossils from the Wasatch Formation were published by E.D. Cope (1872) and by O.C. Marsh (1876). C.L. Gazin (1952, 1962) and Savage, et al. (1972) published descriptions of fossils from the Wasatch Formation, near LaBarge, Big Piney, Bitter Creek, and the Red Desert. Fossil collections from lands administered by the Green River Resource Area are housed at the Smithsonian Institution, the University of Wyoming, the University of California-Berkeley, the American Museum of Natural History, and Yale University. The University of Colorado at Boulder and the State University of New York at Geneseo have active research programs in the Wasatch Formation.

Green River Formation Extensive outcrops of the Green River Formation occur around the margins of the Green River Basin, the Washakie Basin, and the Great Divide Basin. The Green River Formation is well known for its fossil fish (Grande 1980, Buchheim and Surdam 1981). Almost every paleontological collection in the United States, and many other countries, contain examples of the Green River fish fauna. Birds such as frigatebirds (Olson 1977), woodpeckers (Feduccia and Martin 1976), and shorebirds (Olson and Feduccia 1980) are occasionally found. Fossils of invertebrates, plants, mammals, reptiles, and amphibians have all been found in the Green River Formation (Grande 1980).

Bridger Formation The Bridger Formation is exposed in the central part of the Green River and Washakie Basins. From the time that the Hayden Survey collected in this area in 1869, until the present day, the Bridger Formation's vertebrate fossils have been extensively studied and published; Gazin (1976) listed over 200 publications concerning Bridger fossils. Collections of Bridger Formation mammals exist in the American Museum of Natural History, Yale University, the Smithsonian Institution, the Carnegie Museum, Princeton University, and the University of Wyoming. In recent years, the University of Colorado Museum, Denver Museum of Natural History, American Museum of Natural History, University of Michigan, University of California-Berkeley, and Loma Linda University have developed active research programs in the area.

Washakie Formation The Washakie Formation occupies the central part of the Washakie Basin in the southeast part of the Resource Area. It is similar in age to the Bridger Formation and is also rich in vertebrate fossils (both mammals and lower vertebrates). E.D. Cope described fossils from the Washakie Formation in 1872; Princeton University and the American Museum of Natural History also acquired fossils from the Washakie Formation in the 19th century. The Field Museum (Chicago) has collected extensively in this area (Turnbull 1978) and continues an active research program. The State University of New York at Geneseo has also begun research on this unit.

Oligocene and Miocene Epochs

Bishop Conglomerate The Bishop Conglomerate is composed of coarse conglomerates derived from the Uinta Mountains, and to this date only a few vertebrate fossils have been discovered in it (Bradley 1964).

Browns Park, Arikaree, and South Pass Formations These units are not well exposed in the Green River Resource Area, and have not produced any known fossils. They are probably of Miocene age.

FIRE

The Green River planning area is composed of a combination of basin areas, upland brush (transition zones), and conifer stands. Fuels are typically broken only by water or by bare ground areas at ridge tops, resulting in large (2,000+ acres), infrequent fires.

Historical fire occurrence between 1980 and 1991 is shown on Table 3-3 and Map 63. An average of 33 fires have occurred annually over the 12-year period. Acres burned have ranged from spot fires of less than one acre to large fires several thousand acres in size.

The majority of fires occur south of Rock Springs along a lightning belt extending from Utah (high Uintas) east along the state line. This occurrence pattern may exist because the best opportunity for a sustained ignition is where lightning can strike standing trees.

Prior to fire suppression activities and modern civilization, large fires occurred over cyclic periods (depending on fuel system, i.e., sagebrush/grass, juniper/sage, or conifer forest) involving entire drainages. In addition to natural occurrence, 19th and 20th century livestock operations often burned the range lands in the fall of the year. With increased grazing, the abundance of fine fire fuels has been reduced, thus causing a drop in annual fire occurrence. Studies of the transition zones indicate large fire occurrence to be common over the last 300 years. As a result of fire suppression over the last 100 years, brush and tree invasion is common on the edges of the basin area particularly in the sagebrush/juniper and aspen/conifer communities.

Fire effects on the ecological systems found in the planning area are well documented. A brief summary of each major system involved will classify local effects.

The sagebrush/grass system when burned, generally sets the system back to perennial grass, which after 20 to 30 years returns to its original brush density. The life cycle of this system is generally 30 to 40 years, however, 70 to 100 years is not uncommon.

The juniper/conifer/sagebrush system, when burned, generally sets the system back to a perennial grass, which is re-invaded by sagebrush in 10 to 15 years, and is re-invaded by conifers (lodgepole, white bark, juniper, or limber pines) within 75 to 100 years. This is generally the marginal limit of the pine species and a full stand is not expected - rather a broken mixed stand. The transitional zone between the basin sagebrush and upper conifer forest is typified by this system.

The conifer/mixed conifer system, when burned, is re-invaded by conifer seedlings and perennial grasses within 10 to 15 years. This system generally returns to its original density within 75 to 100 years. Systems such as this often become diseased and bug infested and become fire hazards after more than 150 years.

The aspen/conifer or aspen/sagebrush system, when burned, sets the system back to a homogeneous aspen stand. The system is re-invaded by conifers or sagebrush in 75 to 150 years. Most aspen stands in the planning area are dependent on fire for periodic renewal.

The overall fire effect for the planning area has been the opening of dense vegetation (brush or tree) and the setting back of systems to a highly productive perennial grass/brush stage. Age classes have been staggered and a mosaic pattern is maintained. Vegetation patterns are typically highly fragmented in age class and distribution. These effects have been limited as fires in the planning area are typically extinguished as soon as possible.

Human activity during the late 19th and 20th centuries has substantially altered fire occurrence and burn patterns. Increased development and recreational activity have resulted in numerous roads, which makes access for wildfire suppression and prescribed burn activities easier; but it has also led to increased human use and subsequently more fire occurrences. Active fire suppression programs have led to increased fuel loading in the brush and forest communities. This is resulting in larger, more intense fires once an ignition occurs. Human activity has also created hazards for fire suppression personnel. An example would be unauthorized dumping of hazardous and industrial wastes.

FORESTS AND WOODLANDS

General Commercial Forest Type Condition

The Green River planning area contains about 7,900 acres of commercial forest land. There are 357 acres of seed/saps, 3,549 acres of pole timber, and 4,037 acres of sawtimber (Table 3-4). Total estimated standing volume is 13,972,439 cubic feet or 62,875,974 board feet of trees 5 inches diameter breast height or larger (Table 3-5).

Sawtimber accounts for 4,037 acres or 51 percent of the total commercial forest land. This timber type is mature to overmature. Many of these stands are decadent and exhibit considerable mortality. Lack of past management actions has resulted in these unhealthy stand conditions. Pole timber accounts for 3,549 acres and many of these stands are as old as the sawtimber stands. However, these trees are smaller in size because of over stocking, and resulting growth stagnation. The 357 acres of seed/saps results from past harvest activities or old burns.

Growth potential for the commercial forest land depends on the capability of growing 20 cubic feet per acre per year. This would be a minimum of 158,860 cubic feet or 714,870 board feet annually. Based on allowable harvest calculations, the Green River planning area has the potential to sustain an annual estimated harvest level of 500,000 to 1,000,000 board feet, depending on the level of forest management activity.

Maintaining forest health and vigor for the commercial forest stands requires following prescribed silvicultural prescriptions for each forest type.

Silvicultural practices in the commercial forest lands would include clearcutting, individual tree marking, shelter wood, thinning, and group selection.

Harvesting fuelwood, i.e., dead trees, by public demand sales is strictly a wood salvage operation. Meeting the public need for this product is important; however, this action does not improve forest health or tree vigor. Larger commercial sales are necessary to perpetuate forest cover by stand replacement.

In addition to the commercial forest land, the planning area has approximately 127,977 woodland/forest land acres. Aspen, limber pine, and juniper are the major forest types comprising the woodland acres. These woodland acres have important wildlife habitat, recre-

ational qualities and soil and water values. These stands also provide minor forest products upon public demand.

The major forest resource for the Green River planning area is located in four main areas: the Wind River Front, Little Mountain, Hickey Mountain-Table Mountain area, and Pine Mountain. For purposes of this document, the forest resource will be divided into these compartments (Map 6).

Historical and Current Use

Earliest uses of the forest in the planning area were Indians collecting tipi poles, firewood, and hunting and fishing for their survival. Settlers in the 1800s needed wood products for buildings, fences, wagon repairs, and firewood. As mining activity increased, so did the demand for mine timbers. The construction of the Transcontinental Railroad in the 1860s created a demand for railroad ties some of which were taken from what is now BLM-administered land. Demand for railroad ties was high between 1920 and 1930 when the Union Pacific Railroad Company was expanding its routes. Tie cutting activity subsided in the early 1930s while the area experienced an increased demand for dimensional lumber.

The planning area has occasionally advertised timber sales for the Wind River Front and Pine and Little Mountains. Sales advertised on Pine and Little Mountains have either resulted in defaulted contracts or no bidders at all. It is very difficult for timber operators to receive a profitable rate of return on Pine Mountain and Little Mountain timber due to the long hauling distance. Decreasing availability of timber throughout southwestern Wyoming and northeastern Utah is expected to increase the demand for the forest resource in the planning area.

Pine Mountain, Little Mountain, and the Wind River Front all have firewood, post/pole, and Christmas tree sale areas that are designed to meet public demand and help achieve forest management objectives for these areas.

The majority of the commercial conifer species are located along the Wind River Front. These stands are primarily found extending from timbered areas on Forest Service land. The planning area stands extend downslope away from the Wind River range reaching the transition zone of sagebrush hills. Moderate-sized stands of commercial conifers are also found on the Pine Mountain compartment and Little Mountain compartment near the Colorado and Utah borders. These two compartments also contain large stands of juniper scattered throughout their lower elevations. The Hickey Mountain-Table Mountain unit is composed primarily of scattered stands of juniper with small pockets of aspen and Douglas-fir intermixed on Hickey Mountain.

Woodlands data was collected through aerial photo interpretation. No field inventories were done on any of these stands. Stands were identified and entered into the GIS computer system to obtain acreage figures on juniper for the planning area. Woodland inventory data was also correlated with Landsat acreage information.

The conifer stands can be divided into two categories. The first category includes the north-facing, cooler slopes that are mostly occupied by the Engelmann spruce/subalpine fir complex (spruce-fir) with occasional Douglas fir intermixed. This complex is dominated by subalpine fir. The second category includes the south, east, and west facing slopes which are occupied by lodgepole pine and the limber/white bark pine complex, as well as spruce-fir in the transition zone from north to east. Lodgepole is the most prevalent species in this complex.

Aspen stands are found throughout the planning area on a variety of aspects. The most dominant occurrences are on east to north facing slopes. Much of the aspen occurs in variable sized stands adjacent to the downslope edge of the conifer zone. Aspen stands may be intermixed with both categories of conifer or totally isolated.

Two additional species, narrow leaf cottonwood and Rocky Mountain juniper are also found in the planning area. Small amounts of cottonwood are found growing in riparian zones adjacent to streams and rivers. Juniper stands are found predominantly south of I-80 in fairly continuous, moderately stocked stands scattered throughout the transition zone between the valley bottoms and the mountains.

Insects and diseases are present in most of the timber stands in the planning area. Dwarf mistletoe is the most common disease and the mountain pine beetle the most common insect affecting the commercial timber stands. They are currently at endemic or static levels. However, due to the age and general condition of many of the sawtimber stands, insect levels could rapidly change from endemic to epidemic proportions especially during prolonged drought conditions.

The 7,943 acres of commercial forest land in the Green River planning area are included in the allowable harvest calculations for the Rock Springs District. Calculations were made in 1964, 1975, and 1985. The commercial forest land base in each calculation was considered as lands available for restricted management of forest products. Calculations were made under the principles of multiple use and sustained yield.

Based on the 1985 calculations, the Green River planning area could annually harvest from 104,000 cubic feet to 225,000 cubic feet, depending upon management constraints.

A large number of subalpine fir seedlings are becoming established under lodgepole, aspen, and Douglas fir overstories and may affect the future commercial quality of many stands. Subalpine fir will become the major stand component without management activity, such as harvesting, that favors the other species. This could have an important effect on the merchantability of forest products on BLM-administered lands. Subalpine fir is a less desirable commercial species because of its lower strength and nail holding characteristics and its higher susceptibility to rotting and higher warpage percentage.

Present Practices

The forest management activities in the Green River planning area are guided by existing management framework plan documents and by various mandates, directives, and policies.

Forest management activities consistent with sustained yield and multiple use are designed to provide the public (both individual and commercial users) with forest products.

Certain forested acreages have harvest method and equipment use restrictions to protect other resources. These restrictions were not referenced in the MFPs, but were referenced in the allowable cut calculations in 1984. One restriction prohibits conventional tracked or wheeled skidding equipment on slopes in excess of 45 percent to protect watershed values. The 45 percent break is used because it is the limit that wheeled and braked vehicles can safely operate without creating significant soil disturbance. Another restriction prohibits clearcutting within 100 feet of live water. Buffers of 100 feet around streams and slopes greater than 45 percent were placed in restricted or deferred management actions in the allowable harvest calculation (Table 3-6).

On Pine and Little Mountains, management emphasis has been placed on reducing the subalpine fir component that is overtaking

aspen and mixed conifer stands. This is achieved through firewood and Christmas tree cutting. Recent timber sales on Pine Mountain have resulted in defaulted contracts or a lack of interested bidders.

The large expanse of juniper acreage within the southern half of the planning area is currently receiving very little management activity. Only a few permits are sold annually for juniper firewood and Christmas trees. Eventually, the juniper stands will be managed under a Woodland Management Plan, which will provide for better long-term management of the woodland type.

The Wind River Front has approximately 4,000 acres of commercial timber. There are also three firewood sale areas that are open to public demand sales. All of the stands in the area are in need of forest management practices which include pre-commercial thinning, commercial thinning, and final harvest. Areas not regenerating naturally or nonstock areas may require tree planting.

Reforestation is being accomplished by natural seeding and occasionally by planting containerized stock or direct seeding. The natural method is preferred and is accomplished by designing the harvest method and unit configuration to leave an adequate seed source and to prepare a suitable seed bed. Actual methods will differ with the species to be reproduced. Most seed bed preparation is presently being accomplished by piling and burning the logging slash and debris. This action provides an adequate seed bed. If the desired results have not been attained within a 5- to 15-year period, then planting or seeding or both are employed.

At present, no timber stand improvements (thinnings, etc.) are being conducted in the planning area other than through post/pole and Christmas tree sales. At the present level of harvesting for these products, the acreage treated is insignificant.

Social and Economic Considerations

Supply and demand side forest management elements are discussed and displayed in the Present Demand section.

Local (Sweetwater County) public attitudes towards timber harvesting vary with the product being harvested and the magnitude of the harvesting project. Large (1 million board foot or larger) sawtimber sales receive some negative feedback from the public. However, most timber harvesting is the result of public demand for fuelwood, not commercial sales and is widely accepted. Personal use firewood, post/poles sales, and Christmas tree sales are supported by the public.

In 1988 two timber sales on Pine and Little Mountains generated $6,261 and $654 respectively. Neither timber sale was completely harvested. Table 3-7 shows timber product sales and revenues for the entire planning area.

Present Demands

The Green River planning area annually processes approximately 700 permits for the disposal of forest products: 316 for firewood (800 cords), 13 for post/poles (1,040 posts/poles), 341 for Christmas trees, and 12 for wildlings. Table 3-7 shows the number of permits issued, product quantities, and values received.

The BLM has been unable to fulfill some requests over the past several years. This results when requests are received for locations where the product: (1) does not occur in sufficient quantities; (2) is inaccessible and the amount sought does not justify construction access; or (3) all harvesting has been administratively prohibited. The planning area has received approximately three commercial permit requests (for post/pole, firewood, or Christmas trees), with an estimated value of $250 to $1,000, that cannot be filled. Some sales have been offered for which there was no demand.

LANDS

The majority of planning area lands (surface and mineral) are owned by the federal government. Principal non-federal landowners are the Union Pacific Resource Corporation, Rock Springs Grazing Association, and the State of Wyoming.

The checkerboard land pattern which resulted from early railroad grants made by the federal government to the Union Pacific Railroad Company crosses the planning area from east to west. Nearly every odd-numbered section within 20 miles each side of the railroad mainline right-of-way is under private ownership. This ownership pattern creates a major impact on resource management. Lands north and south of the checkerboard are predominantly solid blocked public lands.

Two major cities (Green River and Rock Springs), one incorporated town (Superior), and several unincorporated populated areas (Reliance, Eden-Farson, Jamestown-Rio-Vista, Point-of-Rocks, Table Rock, Bitter Creek, Burntfork, Lonetree, and McKinnon) are located within the area.

The Bureau of Reclamation, the U.S. Fish and Wildlife Service, and the U.S. Forest Service have large acreages withdrawn for water, wildlife, and recreation projects. The Bureau of Reclamation administers the Seedskadee and Eden/Farson projects. Applications for partial revocation have been submitted to BLM; they are under review.

The U.S. Fish and Wildlife Service manages the Seedskadee Wildlife Refuge, which was developed as mitigation for the Bureau of Reclamation's Seedskadee Project (Fontenelle Reservoir). The Flaming Gorge National Recreation Area is administered by the U.S. Forest Service. These withdrawals are not subject to review in accordance with Section 204(1) of the Federal Land Policy and Management Act.

A major power plant, several large coal and trona mines, oil and gas production, the railroad, tourism, and livestock grazing provide a substantial portion of the economic base for the area.

No utility corridors have been designated in the planning area; however, preferred routes north and south of I-80 have been identified and a restriction has been placed on portions of the I-80 corridor due to congestion.

The realty program is primarily driven by the local mineral industry, and the majority of rights-of-way are issued in support of oil and gas development. Three areas within the planning area are currently very active in oil and gas development: Little Colorado Desert, Greater Nitchie Gulch, and Wamsutter Arch. Grants to support the coal and trona industries comprise approximately 15 percent of the total activity.

There has been a minor interest in permits for installation of major utility lines, rig storage, and for filming.

The Recreation and Public Purposes program was active from 1981 through 1985, and local needs for parks and public facilities were largely met during that period. Current emphasis primarily is on resolving sanitary landfill issues. The Bureau is no longer authorized to issue R&PPs for sanitary landfills, and action is being taken to determine if existing landfills contain hazardous waste.

There are three existing landfill sites within the planning area: City of Green River Landfill, Sweetwater County Landfill, and the Point of Rocks Landfill. The City of Green River has closed out the

landfill site on its R&PP and has moved onto private ground. They have requested a sale of 40 acres for future landfill use. The approximately 160-acre unused portion of the Sweetwater County Landfill site, authorized under R&PP, will be reclassified for sale to the County Solid Waste District. A solid waste transfer station has been constructed at Point of Rocks and the R&PP landfill is to be closed. The 2.5-acre transfer station site will be reclassified for sale to the Solid Waste District.

Fifteen sales have been held over the past ten years to provide approximately 2,000 acres of land for community and industrial expansion. In addition, two isolated tracts have been sold to adjacent landowners. Five sales currently are planned to settle longstanding trespass situations. Four exchanges have been processed resulting in the acquisition of 750 acres of land within the planning area (access to timber lands and acreage for an ORV parking lot). Two of these exchanges were for the acquisition of lands within the Rock Springs District.

Exchanges are being planned using Land & Water Conservation Funds to acquire State inholdings within WSAs, and the Fort LaClede Stage Station.

Approximately 58,900 acres are under right-of-way within the planning area. Of this total, there are 6,200 acres of oil and gas access road and 20,900 acres of pipeline. The remaining acreage is for powerlines, waterlines, telephone cables, highways, and other facilities. An average of 109 realty grants are processed annually. Of these, 33 percent are oil and gas pipelines and 30 percent are APD access roads.

There has been no serious demand for desert land entries in the planning area.

A communication site plan has been approved for Aspen Mountain to provide guidance in the management of existing and new facilities on this prime site.

Withdrawals

Withdrawals are used to preserve sensitive environmental values, protect major federal investments in facilities, support national security, and provide for public health and safety. They segregate a portion of public lands and suspend certain operations of the public land laws such as desert land entries or mining claims. There are overlapping mineral withdrawals within the area: Coal/Oil Shale (263,965 acres), Phosphate/Oil Shale (480 acres), and Phosphate/Coal (160 acres). It is now federal policy to restrict all withdrawals to the minimum time required to serve the public interest; maximize the use of withdrawn lands consistent with their primary purpose; and eliminate all withdrawals that are no longer needed.

Access/Transportation

Access within the planning area is generally good, although on waters other than the Green River, access is limited. Complicating access is the land pattern created by the Union Pacific Railroad Grant which created a checkerboard land pattern 20 miles on each side of the railroad right-of-way (Map 64).

Due to cooperation between the existing landowners and leaseholders, restriction of access has not been a major problem in the checkerboard within the Green River planning area.

The BLM transportation system serves resource programs. BLM-maintained roads provide access to range improvements, recreation areas, community pits, etc. The public transportation system includes interstate highway, state highway, county roads, BLM roads, airports, heliports, river access, and railroads.

Interstate 80 is a 4-lane federal highway and is maintained year round by the Wyoming State Highway Department. The highway is closed several times each year (1-2 day periods) during the winter due to icy road surface and/or blowing and drifting snow. This highway right-of-way is 400 feet in width. The policy of the Sweetwater County Planning and Zoning Commission is to allow no development within 1,000 feet of the Interstate. Signs and displays must be at least 600 feet from the highway boundary, and junkyards must be at least 1,000 feet away (23 CFR 750, 751). There are 224.57 miles of federal highways in the planning area.

State highways within the planning area include Wyoming 28, 430, 530, 370, 371, 372, and 373. There are 245.42 miles of state highway in the planning area. Right-of-way widths vary, but are normally 200 to 400 feet in width.

County roads total 950.25 miles and are mostly unpaved. The majority of these roads were constructed under authority of R.S. 2477 (43 U.S.C. 932, repealed October 21, 1976). Wyoming State statutes limit total right-of-way width for county roads to 66 feet; however, the running surface of many of these roads is from 30 to 100 feet in width. A Notice of Filing was made on these roads by the counties, and the BLM issued documents recognizing the width as 50 feet on each side of the centerline.

BLM roads total 452.73 miles. These roads are generally 1-lane roads which vary in width from 14 to 24 feet.

The Rock Springs Municipal Airport is located on a mesa 8 miles east of Rock Springs. There are two lighted paved runways, a commercial airport terminal, and numerous hangars. The main runway is 10,000 feet by 150 feet, and the crosswind runway is 5,243 feet by 75 feet. There is no control tower; however, there is an FAA Flight Service Center located at the airport. The Sweetwater County Planning and Zoning Commission has designated a protective zone around the airport which limits the height of any facility which might be constructed in that area.

The City of Green River owns an airstrip located approximately 4 miles south of the city. The runway is 6,000 feet long and 125 feet wide with 25-foot landing strips on either side of a 75-foot sagebrush-grass center. The airstrip is bladed once a year by the City of Green River, and receives only incidental use. There are tie-downs at the strip. Strong cross winds in the area prohibit regular use of this field.

There are several heliports in the planning area including the BLM heliport north of Rock Springs and the hospital heliport within the city limits.

River access is provided by several boat ramps located along the Green River near Flaming Gorge Recreational Area and the Fontenelle Recreation Area.

The Union Pacific Railroad, which provides freight service to the area, generally parallels I-80. Spur lines serve the coal and trona mines and the SF Phosphates Ltd. fertilizer plant southeast of Rock Springs. The width of the mainline railroad is 200 feet.

LIVESTOCK GRAZING

Livestock grazing is authorized in 79 grazing allotments on approximately 3.5 million acres of BLM-administered public lands in the planning area. Implemented grazing use in the planning area is found in Appendix 9-3. In addition, there are about 15,100 acres of unallocated BLM-administered lands scattered throughout the planning area. Some allotments contain lands unsuitable for livestock grazing. Other areas are suitable only for certain classes of livestock.

Livestock grazing on BLM-managed public land in the planning area is authorized under section 3 of the Taylor Grazing Act of 1934. "Section 3" permits authorize grazing on lands inside of grazing district boundaries. In addition to 78 allotments with section 3 permits, there is one allotment (Eden-Farson) with grazing use authorized on an annual basis pending final review of Bureau of Reclamation withdrawals (Map C).

The current authorized preference is 318,641 AUMs. However, for the past 5 years, only 180,000 to 200,000 AUMs have been activated annually.

The rangeland program in the planning area emphasizes management of forage for livestock and wild horses, and incorporates needs for wildlife habitat and protection of riparian and watershed values. The specific goals and objectives of the program have and are being accomplished through careful planning at the activity level, with attention given to proper placement of rangeland improvements, distribution of livestock, kind and class of livestock, season of use, suitable grazing systems, plant and animal requirements, and vegetative land treatments. Significant progress toward meeting the overall objectives of the Big Sandy and Salt Wells Management Framework Plans has been achieved.

In 1986, the Big Sandy and Salt Wells Resource Areas were combined to form the Green River Resource Area. The Big Sandy Resource Area included the part of the Green River Resource Area north of I-80. The Salt Wells Resource Area included the part of the Green River Resource Area south of I-80. However, the boundaries of the two previous grazing EIS areas did not coincide with the resource area boundaries. The Salt Wells-Pilot Butte Grazing EIS addressed all lands south of I-80 and the checkerboard lands north of I-80. The Sandy Grazing EIS addressed only the predominantly solid block public lands north of the checkerboard lands.

The management actions proposed in both grazing EIS areas have continued. In both EIS areas objectives were identified through activity plans called allotment management plans (AMPs). There are 33 AMPs in the planning area and eight more to be completed.

Allotment Management Plan evaluations have been completed for the White Acorn (13001), Little Prospect (13002), Bar-X (13008), Henry's Fork (04012), Pine Mountain (04007), Salt Wells (04009), Highway-Gasson (13025), and Lombard (13022) allotments and are available for review in the planning area allotment files. Based on the evaluations, new or revised objectives have been or are being established for these allotments.

A number of range improvement projects have been constructed both for the enhancement and protection of watershed and wildlife values and for the management of domestic livestock grazing. Some of these projects are water developments, vegetative manipulations, and fences (Map 65). Map C displays all of the range improvement projects in the planning area. All projects have been authorized under cooperative agreements or permits, depending on overall benefits and objectives and private investment levels. The construction of range improvement projects in conjunction with a suitable grazing system began and has continued primarily in "I" category allotments.

All of the allotments in the planning area have been assigned to either an M, I, or C category. An explanation of the allotment categorization process can be found in Appendix 9-4. There are currently 31 I, 18 M, and 29 C category allotments as shown in Appendix 9-1. One allotment under Bureau of Reclamation administration has not been categorized (Eden/Farson). Should the Bureau of Reclamation revoke the withdrawal, categorization could occur. The allotment categorization process helps managers identify the intensity of management action needed for each allotment. The categories broadly define management objectives and future management requirements. Multiple-use management prescriptions can then be developed and priorities established for distribution of available funds and personnel.

Since the creation of the Green River Resource Area in 1986, the respective rangeland monitoring efforts that were under way in the Big Sandy and Salt Wells Resource Areas have continued. Appendix 9-1 reflects the type of monitoring information that has been collected in each allotment. In the Sandy EIS area, a majority of the monitoring studies were established between 1981 and 1984, primarily in allotments with completed AMPs. These studies included actual use, vegetative utilization, rangeland condition and trend, and precipitation.

The rangeland monitoring effort for the Salt Wells-Pilot Butte EIS area began during the 1984 field season. The I category allotments were given first priority, and were followed by the M and C category allotments. Appendix 9-1 displays the 7 initial I category allotments to have trend studies established with implemented AMPs in accordance with the 1984 Record of Decision and Rangeland Program Summary for the Salt Wells-Pilot Butte EIS (USDI 1984). More trend studies have been added in other allotments. All of the allotments in the Salt Wells-Pilot Butte EIS area have had actual use, utilization, and precipitation information collected. Many have also had data collected on riparian area condition and trend.

The trend transects established in allotments with existing AMPs (especially AMPs over five years old) have been primarily in upland vegetation sites. However, many of the more recent AMPs contain objectives for plant composition improvement in riparian areas. In 1987, a special "greenline" transect was developed in the Green River Resource Area to help establish riparian area vegetative composition objectives that could be realized through management. This transect has been established in several allotments in both EIS areas.

Rangeland monitoring information has been analyzed for all of the allotments in the planning area. Appendix 9-5 contains a description of the current allotment situation according to this analysis. In addition, range specialists, in conjunction with resource specialists in other programs, have identified specific conflicts or problems that currently exist or have potential to exist in each allotment. Appendix 9-6 contains a list of these conflicts and problems. These uses affect forage availability, condition and utilization and can create conflicts with livestock grazing management. These conflicts are especially apparent in the I category allotments. Specific descriptions of uses and conflicts are on file in the Resource Area Office.

MINERALS AND GEOLOGY

Most of the resource area falls within a broad region of subdued relief that has been termed the Wyoming Basin physiographic province (Fenneman 1931). Portions of this province lying entirely or partially within the boundary of the resource area are: the Green River, Great Divide, and Washakie Basins and the Rock Springs Uplift (Figure 9). The province is made up of high plains and plateau areas and is bordered by mountain ranges and major uplifts of the Central Rocky Mountain Province. The southern end of the Wind River Range extends into the resource area on its northeast border. Surface features reflect erosion by wind and water in an arid, cold-temperature environment. In some instances, they have been modified by faulting or volcanic activity.

Historical Geology

Figure 10 lists formations present in the resource area and gives a brief lithologic description of each unit.

AFFECTED ENVIRONMENT

The Precambrian era is evidenced in outcrops of granitic rock in the Wind River Range (dated at 2.6 billion years) and metamorphic rocks that may be more than 3 billion years old.

For most of the Paleozoic era, Resource Area lands were situated just east of a marine basin located close to the equator. It was frequently covered by warm shallow seas and was mainly the site of carbonate deposition with a high percentage of clastic sediment. Depositional sequences were interrupted by several withdrawals of the sea, followed by erosional periods. The boundary between marine basin and shallow water parallels the present arcuate trend of the Thrust Belt (Figure 10), lying just west of the resource area.

The area was emergent following the Precambrian and was gradually covered by a sea extending from the west depositing first the Flathead Sandstone, then Gros Ventre Formation shales that get thinner as they extend eastward across the region, and finally carbonate sequences of the Gallatin Limestone.

Additional sequences may have been deposited over the region, but were later removed by erosion after withdrawal of the sea (Ross 1976). As a new sea began to flood the continent, the Bighorn Dolomite was deposited. It occurs only in the northwest part of the resource area. Deposition in a near-shore marine environment persisted for a long period, but a new withdrawal of the sea was followed by a period of extensive erosion, removing all sediments deposited after the Bighorn Dolomite.

As marine waters again moved into the area they deposited carbonate sediments (Darby Formation) in a shallow marine setting. The Darby was probably deposited in the Great Divide and Washakie Basin areas, but later was removed by erosion. The overlying Madison Limestone is open marine in its lower part and shows evidence of shallower marine conditions in its upper part (Rose 1977). Limestones were being deposited on the east and thicker dolomite and anhydrite were being deposited in the west. Some erosion of the top of the Madison occurred after deposition.

Above the Madison, the Amsden Formation contains a widespread sandstone unit, present at its base, that is overlain by a middle unit of red shale, siltstone and sandstone, that may have been derived from emergent areas of Precambrian rocks in southeastern Wyoming. Additional evidence for uplift is seen by the presence of an erosion surface occurring within the Amsden. The upper part is made up of interbedded limestone, dolomite, siltstone or sandstone, and gray shale (Petersen 1988).

Above the Amsden lies the Tensleep Sandstone. The last major marine invasion spread across the area after deposition of this sandstone. During deposition of the overlying Phosphoria Formation, a deep marine basin persisted to the west and shallow marine conditions persisted across the resource area to a shoreline in central Wyoming. East of the marine basin, Phosphoria Formation carbonate deposition predominated over a broad zone that extended across the resource area. Intertonguing sandstone in the carbonate sequences represents shoreline clastic sands transported into the northern part of the resource area.

During the Mesozoic era, the North American continent gradually drifted to northern latitudes. Most of the Mesozoic rocks within the Resource Area, therefore, were deposited in the northern subtropical region. A mountain building event in the Thrust Belt and other mountain building in the rest of the state had a profound effect during Late Mesozoic and Early Cenozoic times.

An erosion surface separates the Paleozoic and Mesozoic rocks indicating that the region was emergent at that time. Later, marine conditions returned to the area depositing the Dinwoody Formation. Intertonguing of marine carbonates and clastics within the Dinwoody reflect sea level fluctuations during deposition. The Dinwoody intertongues with continental red beds of the Chugwater Formation as the sequences are traced to the southeast. The Chugwater Formation in most of the Resource Area is equivalent to the Woodside Shale, Thaynes Limestone, and Ankareh Formation described in the Thrust Belt (Figure 10). Marine sedimentation persisted with later deposition of carbonate and siltstone units of the Thaynes Limestone and lower Ankareh Formation.

Regional uplift then began and permanently changed the depositional patterns that had dominated the region. The region became emergent and a widespread erosion surface separated the lower Ankareh marine sequences from the continental deposits of the upper Ankareh. Terrestrial conditions persisted, after Ankareh deposition, as can be seen in the widespread deposits of the Nugget Formation. It is made up of a vast blanket of sand that was deposited in coastal dunes (Picard 1975).

Overlying the Nugget, limestones and shales of the Gypsum Spring Formation were deposited when marine conditions returned. The Gypsum Spring changes to the east and south into red silty shale and anhydrite. As the sea retreated interbeds of marine and non-marine sandstone and siltstone of the Sundance Formation were deposited. After the sea's withdrawal, the lower part of the Morrison Formation was deposited.

During the Cretaceous age, episodic eastward faulting associated with mountain building continued in the Thrust Belt (Figure 10). Sediments derived from faulting accumulated in a depression extending across the resource area. Deposition, according to Wallem, Steidtmann, and Surdam (1981) was controlled by the interaction between mountain building pulses of clastic sedimentation and a fluctuating sea level. These deposits are therefore made up of clastic marine, transitional marine, and non-marine units. In contrast to earlier periods, sedimentation occurred in a shallow sea located generally east of the resource area, with clastic source areas located generally to the west.

The upper Morrison Formation of Early Cretaceous age was laid down as a sequence of river and lake deposits. Thrust fault activity to the west initiated several periods of accelerated deposition of clastic sediments in this area. During times when faulting slowed, fine-grained clastic sediments were deposited in a brackish coastal region or marine environments. These units make up the Dakota Formation and Mowry Shale. The Frontier Formation overlies the Mowry and is made up of predominantly river deposits in its lower part and mixed river and marine in its upper part. Two delta complexes delivered Frontier sediment into the resource area. A western delta drained the Thrust Belt, and a northern one drained the area of the present day Wind River Range.

The next marine incursion came from the east across the region and resulted in the deposition of the thick Baxter (Hilliard) Shale. Movement on the Rock Springs Uplift began during deposition of the Baxter (Roehler 1965). The uplift continued to be a positive area during deposition of the Blair Formation. The overlying Rock Springs Formation was deposited along a northeast-southwest shoreline that transected the uplift area. The continental part of the formation occupied the northwest part of the uplift and is represented by river sandstone, carbonaceous shale and coal beds. Southeastward these rocks undergo a change to beach and barrier island sands, and offshore sands and marine shale.

The overlying Ericson Sandstone is a river deposit, derived predominantly from the Thrust Belt and in part, from the newly uplifted Moxa Arch just west of the resource area and deposited across the Rock Springs Uplift area. The Almond Formation marks a change from stream sedimentation of the Ericson to swampy lowland deposition. Throughout much of the uplift, the Almond

Formation is divisible into a lower part including floodplain, channel, swamp, and lake deposits, and an upper sequence of marsh, mudflat, lagoonal-bay, barrier beach, and offshore marine deposits.

The Lewis Shale represents the last major invasion of a seaway into the area and only covered the area from the Rock Springs Uplift, eastward. Thereafter, a nearly complete withdrawal occurred during the deposition of the overlying Lance Formation. This depositional phase was brought to an end by mountain building and ultimate complete withdrawal of the seas. By the end of the era, the North American continent was approaching its present day latitudes.

At the onset of the Cenozoic era, the Thrust Belt was in a late stage of development and the ancestral structures of the Uinta Mountains, Wind River Range, Sierra Madre Range, and Granite Mountains had formed on the margins of the Green River, Great Divide, and Washakie Basins. These basinal areas were then largely filled with river and lake deposits nearly burying these mountain ranges. Volcanism to the north contributed large amounts of volcanic sediment to these basins. Climate started out warm-humid to arid-subtropical but gradually cooled. Finally, a period of large-scale regional uplifts re-excavated the region and brought about the present relief.

During the Tertiary era, basin floors and slopes of the surrounding mountains were probably heavily forested and well populated with mammals, reptiles, and other vertebrates. Streams flowing from the mountains distributed sediment in flood plains on the basin floor. The low-lying areas were occupied by swamps, ponds, and lakes. Sediments are represented by the Fort Union and Wasatch Formations. After their deposition, the Lake Gosiute system developed, laying down sediment of the Green River Formation (Figure 11). Climate changed markedly to more arid cycles, and primates and many other mammals, as well as crocodiles and turtles, began to disappear from the area.

The onset of volcanic activity in the Absaroka-Yellowstone region resulted in large amounts of volcanic debris being introduced by streams into these basins. This influx of sediment, coupled with the decline in mountain building activity, caused the basin in the area to be filled. Late Tertiary time brought about the end of this depositional cycle with a major uplift of the Rocky Mountains. With uplift, streams that had been flowing southward across the plain-like surfaces began to cut downward. Gradually, our modern landscape began to develop as the older structures were exposed below the sediment cover.

During the Quaternary period, final touches were made to the landscape of the region. The surrounding mountains were exhumed and the basins re-excavated to their present form. The high mountains were glaciated several times during the Ice Ages. Some of the glaciers may have reached the edge of the basin and deposited sediment around its margin. Local volcanic centers developed, as well as the Killpecker Dune Field.

General Geology

The Green River Basin is a large structural and topographic basin (Figure 9) drained by the Green River and its tributaries. In the north, this river flows in a broad shallow valley, while to the south (south of the Union Pacific Railroad) it becomes a canyon that reaches a depth of 1,000 feet (305 meters). The floor of the basin lies between 6,000 and 8,000 feet (1,820 to 2,430 meters) above sea level, and is primarily a flat to gently rolling plain. Tertiary sediments underlying the basin are predominantly soft and weak, with only a few more resistant beds within the section. Where the rocks are flat-lying, the resistant beds cap low, flat tablelands and buttes.

The outer margin of the Green River Basin is defined by a series of escarpments formed by tilted beds of the Green River and Wasatch Formations (Bradley 1964). North of the town of Green River, the main escarpment forms a conspicuous bluff known as White Mountain.

The flat-lying strata of the Green River Basin exert little geologic control on drainage, resulting in a dendritic drainage pattern. Gravel terraces have developed along most of the major streams, and their elevations range from 5 to 10 feet (1.5 to 3 meters) above river level to as much as 500 feet (152 meters) (Blackwelder 1950). The lowest terraces are slightly modified by erosion and are younger than the last major glacial period (Blackwelder 1950). Higher and older terraces formed as a result of fluctuations in sedimentation brought on by successive glacial advances and retreats. They are progressively more modified by erosion and are commonly cut by canyons and deep ravines so that only scattered remnants remain. Most gravel pits in the Resource Area have been located on these terraces.

The widespread erosion that has shaped the floor of the Green River Basin has resulted in the development of considerable areas of intricately dissected badlands. Badlands are best developed in the soft, weak, mudstone of the Bridger Formation, which is relatively impervious and precludes infiltration of rain water. As a result, runoff is concentrated on the surface, collecting as overland flow which erodes intricate networks of rills and gullies. As the gullies deepen, the ground surface becomes highly dissected.

The Moxa Arch (Figure 9) lies in the western part of the Green River Basin. It is a large anticline that extends northward from the north flank of the Uinta Mountains at the Bridger Lake Field to the Big Piney-LaBarge Field. Folding of the arch involved Precambrian basement rocks (Wiltschko and Dorr 1983) and subsurface data indicate that the main folding event occurred in the Late Cretaceous, causing erosion of older Mesaverde rocks on the crest of the arch. Younger Cretaceous and Tertiary rocks were then deposited across the unconformity and are not folded (Thomaidis 1973).

The Pinedale anticline (Figure 9), in the northern Green River Basin, is a large structure, approximately 45 miles (72 kilometers) in length and 6 miles (9.7 kilometers) in width. The flanks appear to be relatively symmetrical, but the west limb may be reverse faulted (Gries 1983). The structure probably formed during the uplift of the Wind River Mountains. Only the southern end of the anticline lies within the Resource Area.

The vast majority of surface rocks in the Green River Basin are uncut by faults. However, they are locally faulted around the margins of the basin. The Continental Fault is approximately 55 miles (88.5 kilometers) long (Bradley 1964). It begins east of the resource area, passes between South Pass City and Oregon Buttes, and passes out again near its western end. The Henry's Fork Fault is about 20 miles (32 kilometers) long, with most of its trace lying south of the Resource Area, in Utah. A segment about 4 miles (6.4 kilometers) long lies in T. 12 N., Rs. 108 and 109 W. The fault may have had as much as 12,000 feet (3,658 meters) of vertical movement (Hansen 1969).

The Rock Springs Uplift (Figure 9) is a broad, elliptical anticline that began to form after the Lance Formation was deposited in the Late Cretaceous (Roehler 1965). Erosion has uncovered a sequence of Tertiary and Upper Cretaceous rocks. The rocks exposed on the uplift are cut by a number of faults and data indicate that the west flank of the uplift is bounded by a thrust fault that does not reach the surface (Love and Christiansen 1985; Bradley 1964).

The crest of the Rock Springs Uplift is occupied by a large depression, called the Baxter Basin, which is carved into the soft weak rocks of the Baxter Shale. The Baxter Basin is about 15 miles (24 kilometers) wide and 40 miles (64 kilometers) long and its floor is primarily a flat, featureless plain interrupted by considerable

expanses of dissected badlands. This basin is enclosed by a series of concentric ridges formed by tilted, relatively resistant sandstone beds exposed on the flanks of the uplift. The ridges are separated by valleys that are eroded into softer beds of shale and coal.

Bitter Creek, a tributary to the Green River, flows entirely across the uplift in a westerly direction. It cuts through notches almost 1,000 feet (300 meters) deep on the west flank of the Rock Springs Uplift.

The Leucite Hills, at the north end of the Rock Springs Uplift, are the remnants of a Quaternary volcanic field. They form a series of buttes that rise precipitously above the surrounding plains. Steamboat Mountain and South Table Mountain are buttes capped with high potassium lava flows. Boars Tusk, just northwest of the northern end of the uplift, is the remnant of a volcanic neck, as is Pilot Butte, the westernmost volcanic outcrop.

At the far northern end of the Rock Springs Uplift, is an extensive dune field called the Killpecker Dunes. This dune field is at the western end of a narrow belt of dunes that stretches 150 miles (240 kilometers) to the east. The outer margins of the field are occupied primarily by dormant dunes, while active dunes are found in the central portion of the field.

The Great Divide Basin is a structural basin (Figure 9) underlying a topographic and internally drained basin (Love 1961). The Continental Divide splits near the southeast end of the Wind River Range and converges again at the north end of the Sierra Madre Mountains. Lake, swamp, and stream deposits of Tertiary age make up most of the bedrock and surficial deposits are predominantly soft and weak, causing the basin to be nearly flat and featureless, with occasional intermittent lakes and dry flats in the lowest areas. Low hills and ridges form the high ground that marks the two branches of the Continental Divide. Altitudes range from 6,500 to 7,500 feet (1,980 to 2,290 meters) above sea level.

The largest, most conspicuous features of the Great Divide Basin are dry-lake flats. These broad shallow depressions are the sites of former lakes that are being filled in by debris washed in from surrounding highlands (Wyant, et al. 1956). Isolated sand and gravel terrace deposits (Pipiringos 1961), with at least eight different terrace levels have been recognized (Sheridan, et al. 1961). The youngest features are the Killpecker Dunes which extend across this basin.

The Wamsutter Arch (Figure 9) is a low relief anticline, extending eastward from the Rock Springs Uplift and separates the Great Divide and Washakie Basins.

The Washakie Basin is a structural and topographic basin, south of Interstate 80 and east of the Rock Springs Uplift. The overall configuration of the basin is that of a very broad, roughly square bowl shape with an outward facing escarpment, developed on the Laney Shale Member of the Green River Formation. On the west the escarpment is known as Kinney Rim, and on the north it is known as Laney Rim. Altitudes above sea level range from 6,100 feet (1,860 meters) in drainages to 8,700 feet (2,650 meters) on Pine Butte.

Lake and river deposits of Tertiary age are exposed in badlands such as Adobe Town and on ridges across the Washakie Basin. Younger sediment and sand dunes fill the stream valleys and cover some areas of low relief. Only intermittent streams drain this basin. Most, such as Shell Creek and Sand Creek, are tributaries to the Little Snake River in Colorado. The north end of this basin drains into Bitter Creek, a tributary of the Green River.

The dominant feature of the Southern Wind River Range in the planning area is a very gently dipping erosion surface comprised of Tertiary sediments (Bayley, et al. 1973). This surface blends the Precambrian core of the range with the Rock Springs Uplift and Green River Basin to the south and southwest. Relief in these foothills is 300 to 500 feet (90 to 150 meters). The Sweetwater River and its tributaries drain the area.

This range is one of the most spectacular of the Precambrian uplifts in the state. It is basically a huge block of granite that has been moved by faulting south-westward over the Green River Basin. This fault is called the Wind River thrust fault and is covered by sediments on its southern end where it extends into the resource area.

Oil and Gas Geology

Historical Background

Between 1900 and 1916, a number of shallow wells were drilled on the Rock Springs Uplift in search of oil. A number of oil and gas shows were encountered but no wells were productive. Additional work began in the 1920s with the first discovery being the South Baxter Basin field in August of 1922. The Ohio Oil Company tested the Dakota Formation, recovering 36 million cubic feet of gas per day. Drilling activity has occurred almost continuously since this discovery and has resulted in the location of a large number of gas and oil fields along the axis of the Rock Springs Uplift and to the east, beyond the resource area boundary. Baxter Basin South is still productive and had produced 136.5 billion cubic feet of gas and 5,934 barrels of oil through 1992.

Additional fields discovered along the crest of the Moxa Arch near the present-day town of LaBarge led to activity that eventually extended into the resource area. The first Moxa Arch discovery within the resource area was the Church Buttes gas field, a Dakota Formation discovery, found by Mountain Fuel Supply Company in 1946 using seismic interpretation methods. Initial production was 12.5 million cubic feet of gas per day and 146 barrels of condensate. Church Buttes field had produced 401 billion cubic feet of gas and 490,720 barrels of oil through 1992 (Wyoming 1992).

Prior to 1926, no exploratory oil and gas well had been drilled in the Washakie Basin. With the discovery of natural gas at Hiawatha on the Wyoming-Colorado border, interest was kindled. The discovery well gaged 45 million cubic feet of gas per day from the Wasatch Formation. Subsequent exploratory activity resulted in discoveries of major fields, mostly in Cretaceous rocks, at Canyon Creek in 1941, Table Rock in 1946, Trail and Desert Springs in 1958, Patrick Draw in 1959, and at Jackknife Springs Field in 1972.

Exploration and development continues today. The number of drilled wells in the resource area is listed by status and county on Table 3-8. Methods and procedures to conduct geophysical exploration leasing, well permitting, drilling operations, development, production, and subsurface practices are described in Appendix 7-2.

Origin of Oil and Gas

Crude oil and natural gas are composed chiefly of hydrocarbon compounds and are found primarily in sedimentary rocks. They are mostly confined to sediments of marine origin, although minor amounts have been found in freshwater sediments. Petroleum hydrocarbons are derived from organic matter of microscopic plant and animal origin. This is substantiated by the fact that the largest petroleum accumulations occur in sedimentary basins with widespread organic debris and that petroleum hydrocarbons have been found closely associated with little-altered organic matter (Skinner 1976).

The earliest formed petroleum compounds tend to be very heavy, viscous oils. With increasing temperature and pressure, the heavy oils are "cracked," forming lighter oils and natural gas. The lighter constituents are more mobile and may migrate away from the rocks

containing the organic debris, called the "source rocks," into more porous and permeable rocks called "reservoir rocks." Oil and gas are "trapped" when they migrate to a place where further movement is barred by a structural and/or stratigraphic feature, i.e., faults, impervious beds, etc. Both source and reservoir rocks are widespread throughout the resource area as evidenced by the large number of fields so far discovered. The resource area thus has a high potential for the occurrence of oil and gas in economic amounts.

Trapping Mechanisms

Figure 12, a cross-section through the Resource Area, portrays the most common trap types. A structural trap, as illustrated on the Rock Springs Uplift, has a closure in which oil and gas accumulate after migrating up-dip through strata. An impervious cap rock seals the accumulations against further vertical movement while water generally underlies and confines the hydrocarbon accumulation against the cap rock. The anticlinal structure, possibly modified to some extent by faulting, typifies the structural trap in the Resource Area.

Exposed structures are readily apparent and thus received the earliest and most extensive exploration effort. Buried, or subsurface structures are more difficult to locate, requiring detailed geophysical and geologic analysis. An example of a buried structure is the Moxa Arch of the Green River Basin.

Stratigraphic traps, as illustrated in the Red Hill and Patrick Draw areas of the Great Divide Basin, may depend upon a change in the amount of space between grains of sediment (porosity) and/or how well those spaces are connected (permeability) to block the migration of petroleum hydrocarbons, allowing an accumulation of hydrocarbons to develop. Changes in porosity and permeability occur as a result of depositional history, such as the deposition of sand bars and alluvial stream deposits, or the truncation of permeable strata with subsequent deposition of an overlying impermeable formation. They may also result from later alteration and metamorphism (such as solution leaching) to form a porous, permeable rock, or from mineral deposition in pre-existing pores to form a permeability barrier. Stratigraphic situations which may trap a hydrocarbon accumulation are not apparent at the surface as in the case of the surface anticlines, and in only a limited manner are indicated by geophysical data. Their discovery depends upon detailed and time-consuming geological study.

Oil and Gas Occurrences

Many producing fields are aligned along two major anticlinal structures. These structures are the Moxa Arch in the Green River Basin and the Rock Springs Uplift. Fields in the Washakie Basin, Great Divide Basin, and on the low relief Wamsutter Arch separating these two basins, are predominantly stratigraphically trapped. Other fields are being developed outside these major producing areas. Most fields produce primarily from Cretaceous age sediments. A number of other younger Tertiary formations and older Mesozoic and Paleozoic age formations produce to varying degrees throughout the resource area.

Hydrocarbon accumulations on the Moxa Arch are formed by both structural and stratigraphic traps. Most of the pre-Tertiary production comes from buried structural traps and combination stratigraphic-structural traps which formed during Late Cretaceous deformation. The Arch persisted as a topographic feature during the early Tertiary. At this time, stratigraphic traps were formed in sands that were deposited across the platform.

Hydrocarbon-bearing structures occur as a series of closed anticlines aligned along the main axis of the Rock Springs Uplift. Faults cross many of the anticlines and commonly contribute to the formation of traps in the reservoir sands. Some of the fields on the flanks of the uplift are formed by stratigraphic traps. All the fields on the uplift are gas fields. Production is primarily from the Frontier Formation and, to a lesser extent, from the Dakota and other Cretaceous and Jurassic formations.

Most fields in the Washakie and Great Divide Basins produce from stratigraphic traps, although a few local structural traps are present. Production comes predominantly from Cretaceous age sediments, with a handful of fields producing from older sediments.

Table 3-9 shows areas of high, moderate, and low oil and gas development potential for each special management area. The number of wells drilled in these areas and their present status are shown in the Table 3-10.

Almost all of the area has been leased for fluid minerals such as oil and gas. Leases are issued for a 10-year period, and several are currently held by production activity. This situation is anticipated to continue.

All WSAs, the Seedskadee Wildlife Refuge, and incorporated cities and towns are closed to leasing. These are non-discretionary closures in accordance with 43 CFR 3100 (see Table 3-11).

Production History

Hydrocarbons have been produced within the resource area since the 1920s. An analysis of past drilling activity (Figure 13) helps indicate how the resource has come to its present state of development. Easily mapped surface structures on the Rock Springs Uplift were located and drilled through the 1940s. These structures were gas prone and gas resources were of minor interest in the country, so few wells were drilled. Industry was concentrating its resources in areas of the United States that were oil prone.

During the late 1950s, activity began to increase, due mainly to improvements in exploration technology (e.g., gravity, magnetic, and seismic surveys) (Appendix 7-2). These methods are useful for locating buried structures. Some of these structures were oil prone to the east of the Rock Springs Uplift and their discovery set off a drilling boom through the 1960s. The 1970s and 1980s saw a drop and levelling off in the number of oil wells drilled. Much of the oil at relatively shallow depths has been discovered. Some oil discoveries are being made, but the majority of oil wells drilled are infill development wells in previously discovered oil fields.

Over the past 40 years, the number of gas wells drilled has increased over each 10-year period (Figure 13). These drilling increases are due to improvements in technology, the recognition of the importance of stratigraphic traps that contain much of the resource area's gas, deeper drilling targets which favor gas over oil, and the increase in prices paid for gas. During the 1980s, more than four times as many gas wells were drilled as oil wells, indicating the increased importance of this resource. Drilling activity declined about 15 percent during the 1980s as a result of the rapid decline in oil prices beginning in 1983. This drilling decline was not as great as in most parts of the United States. Finding costs in the region have been low enough to continue to encourage drilling.

The number of plugged and abandoned wells declined 50 percent during the 1980s from the 1970s. This has been due to the industry concentrating on development drilling and drilling the lower risk exploratory projects.

A review of drilling records indicates the number of wells completed in each producing formation (Figure 14). Gas wells usually produce from the Frontier (38.47 percent) and Dakota (21.97 percent) Formations or the Mesaverde Group (18.60 percent). The

youngest gas producing formations are of Tertiary age and the oldest formation is the Big Horn Dolomite. Oil wells are most often completed in a formation of the Mesaverde Group (64.88 percent) or the Tertiary (13.32 percent). Oil wells produce from the same formations as do gas wells, with the exception of Mowry Shale and the Big Horn Dolomite.

Oil wells produce from formations that are predominately buried to shallower depths than formations that produce gas. About 86 percent of oil wells produce from Mesaverde Group and younger rocks, while about 67 percent of all gas wells produce from rocks that are older and generally more deeply buried. Figure 15 shows more clearly that oil wells tend to produce from shallower depths. About 82 percent of all oil wells produce from depths of less than 7,000 feet, while about 68 percent of all gas wells produce from greater depths.

Wyoming Oil and Gas Conservation Commission statistics for 1989 were used to obtain production figures for all producing fields within the resource area. About 111 fields have produced oil and/or gas within or partially within the resource area. Cumulative production has been more than 3 trillion cubic feet of gas and almost 170 million barrels of oil.

Pipelines and Natural Gas Storage

An extensive natural gas transmission system now exists in Wyoming and the Rocky Mountain region. The state has over 12 major natural gas pipelines and 14 natural gas storage facilities. In addition, seven major pipelines are regulated by the Federal Energy Regulatory Commission and transport natural gas from the region in all directions in the interstate system.

Northwest Pipeline is part of a 1,500-mile natural gas system. About 210 miles of this system pass through Wyoming, with a portion passing through the resource area. The pipeline's value in Wyoming is $68.7 million. This pipeline serves the northwest United States market. A $400 million expansion was completed in 1993 and enables the transport of an incremental 140 million cubic feet of natural gas from the Wyoming supply area. Approximately $308 million of new transmittal facilities are planned for 1995 and will provide market outlets for an additional 30 million cubic feet per day of Wyoming produced gas.

The $1 billion dollar Kern River pipeline, running from southwestern Wyoming to California, was completed in 1992. This 904-mile gas transmission pipeline has a capacity of 700 million cubic feet of natural gas per day. This project has opened up new markets in Utah, Nevada, and California. New market demands have resulted in increased development of gas production, gathering, and processing facilities for many firms in southwest Wyoming. The owners have applied to expand the pipeline's capacity by 452 million cubic feet of gas per day. Facility value in Wyoming is over $120 million and 90 percent of capacity is presently coming from Wyoming supplies. The basins of Wyoming and adjacent areas contain nearly 25 percent of the nation's natural gas reserves (excluding Alaska), but at present contribute only about 6 percent of the production, principally due to capacity constraints and distance to market.

In Wyoming, Williams Field Services Company operates a 1,100-mile gas gathering system and a cryogenic processing facility with a capacity of 575 million cubic feet of gas per day. The company also operates a supply hub near Opal which Northwest, Kern River, and Colorado Interstate Gas pipelines access for transmission of their gas. Gathering lines take gas from about 1,400 producing wells in Sublette, Sweetwater, Lincoln, Carbon, Uinta, Park, Fremont, and Washakie counties. The bulk of these wells are in Sublette, Sweetwater, and Lincoln counties.

Pipeline facilities, like railroads, are constrained by the mountainous topography of the west. These topographical controls have dictated creation of three east-west natural gas pipeline corridors across the continent. The central pipeline system extends from the Wyoming Overthrust Belt, through the resource area, and to the Great Lakes and eastern states.

Most gas is sold by producers directly to local gas distribution companies, with the pipeline acting as a "common carrier" of natural gas. Some pipelines have their own contracts with producers and the end user.

Storage facilities have been used by utilities and pipelines to administrate peak loads of gas and other sudden changes in consumption and production. At these facilities, gas is stored underground until needed. The Brady Field is the only gas storage facility located in the resource area. At the Brady Field, gas is injected into the Tensleep Formation via eight injection wells.

The Clay Basin storage facility lies just south of the resource area and receives a large portion of its gas from fields lying within the resource area. The operator expanded its storage capacity from 100 billion cubic feet of gas to 110 billion cubic feet of gas in 1994 (Western Oil and Gas World 1994).

Oil and Gas Development Potential

See Appendix 13 for discussion of oil and gas potential.

Coal

The Green River Coal Region covers all of Sweetwater County and most of the resource area (Glass 1981). Coal was first described in 1852 and the growth of the coal mines came about in 1868, with the recently completed Union Pacific Railroad (LeBar 1980). The minable coal-bearing deposits are centered around the Rock Springs Uplift (Map 3).

The coal-bearing Cretaceous and Tertiary rocks in the resource area were deposited adjacent to a shallow sea, in swamps and bogs, accumulating peat, which was later transformed into coal. From the late Cretaceous to late Tertiary, this area underwent periodic deformation and uplifting. Coal-bearing beds are now tilted against the Rock Springs Uplift. Mining methods used are discussed in the Mining Methods Appendix of the Draft EIS.

Activity

Coal mines within the resource area include three active open pit surface mines, one active underground mine, and one inactive underground mine (Map 66). The coal is used to supply local industry and power plant needs, and is shipped to other eastern and western markets. Environmentally, these low sulfur coals are important locally and in eastern markets; however, projections for demand and supply of southwestern Wyoming coal is dependent upon world oil prices, transportation costs, availability of alternate fuels, and changes in Federal laws and regulations. New low emission regulations are creating higher demands for Wyoming coals.

In 1993, the four active coal mines produced nearly 9.5 million tons of coal. This was lower than recent historical yearly productions due to the loss of a major contract at one of Black Butte Coal Company's mines and the cessation of mining activity in 1992 at Arch of Wyoming's Pilot Butte mine. Presently, Black Butte is actively seeking new contracts and production is expected to increase.

Average annual coal production at the Jim Bridger open pit surface mine is about 6.0 million tons. This coal is averaging 9,500 BTU per pound, 9.5 percent ash, and 0.60 percent sulfur.

Up until 1992, average annual coal production at the Black Butte open pit surface mine was about 4.0 million tons. The loss of a major contract in 1993 caused the production to fall to 1.5 million tons. However, annual production from the Black Butte mine is expected to increase, possibly to past historical averages. This coal is averaging 9,800 BTU per pound, 7.5 percent ash, and 0.45 percent sulfur.

Average annual coal production at the Leucite Hills open pit surface mine is about 1.5 million tons. This coal is averaging 9,700 BTU per pound, 9.0 percent ash, and 0.60 percent sulfur.

Average annual coal production at the Swanson underground mine is about 200,000 tons. This coal averages 11,300 BTU per pound, 6.1 percent ash, and 1.2 percent sulfur.

Prior to cessation, the expected average annual production at the Pilot Butte underground mine was about 400,000 tons. This coal averages 11,000 BTU per pound, 6.6 percent ash, and 0.83 percent sulfur.

Coal Development Potential

Potential for Occurrence identifies areas containing formations known to be coal-bearing, that are not or have not been under lease, license, application, or expression of interest within the last 10 years. Potential for Development identifies areas containing formations known to be coal-bearing and that are or have been under a lease, license, application, or expression of interest within the last ten years. Development potential will predominately be within the area centered around the Rock Springs uplift (Map 3).

Areas with high coal interest and development potential are the Beans Spring/Pio, Deadman Wash (formerly the Leucite Hills Tract), and the Cooper Ridge areas. These areas will be given consideration for new competitive federal coal leasing under the new Federal Coal Management Program.

Coal exploration procedures and exploration license requirements were reviewed in Appendix 7-8 of the Draft EIS. Coal is leased by application procedures were outlined in Appendix 7-9 of the Draft EIS.

The Deadman Wash tract is located approximately 30 miles northeast of Rock Springs and is presently under an exploration permit to Bridger Coal Company and Arch Minerals. Mining considerations made for this tract are based on two coal seams in the lower Fort Union Formation, and seven coal seams in the Lance Formation. Coal beds outcrop in a northwest-southeast trend, dip to the northeast at 2 to 6 degrees, and are broken by four east-west faults, making mining and pit delineation difficult. The expected recovery factor is 90 percent with a maximum economic stripping ratio of 8:1 and a maximum mining depth of less than 200 feet for seams ranging from 3 feet to 15 feet.

Coal within the Deadman Wash tract averages 9,200 British Thermal Units per pound; contains an average of 8.0 percent ash and 0.65 percent sulfur. This is considered a low sulfur coal of approximately 20 million recoverable tons; thus, it is a highly marketable coal to meet new federal air quality regulations. Two mining operations are active in the area, the Bridger Mine located to the east, and the Black Butte/Pit 22 Mine located south of the tract. Both mines supply coal to the Bridger Power Plant and to other local and interstate coal markets.

Preference Right Lease Applications

Since all rights to the Beans Spring PRLA project have been relinquished, there are no longer any coal PRLAs in the planning area. The federal coal lands within the former project area are now part of the competitive federal coal areas.

Sodium/Trona

Discovery of sodium in the raw material trona came in 1938 from a wildcat oil well. Union Pacific later drilled four test holes which led to an agreement with Westvaco Chlorine Products Company to develop a pilot plant and mine to produce soda ash. Processing problems were soon solved and by 1954, plant capacity was 500,000 tons. Since 1954, four other underground mines and facilities have come on line, with production of 6.6 million federal tons in 1992. Mining methods were discussed in Appendix 7-7 of the Draft EIS.

After Wasatch Formation sediments partially filled the basin, Lake Gosiute formed on the low, flat surface, existing for approximately 4 million years. The persistence of the basin during the lake's existence led to the deposition of a thick section of lake sediments, collectively termed the Green River Formation. Trona is found in abundance within the Wilkins Peak Member (Figure 11) of the Green River Formation.

At one point during deposition of the Wilkins Peak Member, Lake Gosiute shrank greatly in size and had no outlet, causing the alkalinity of the lake to increase. The resultant sediments were saline and characterized by thick beds of trona or trona-halite and numerous other rare minerals (Bradley and Eugster 1969) interspersed with thin beds of oil shale, marlstone, claystone, trona or trona-halite, limestone, and tuff. The Wilkins Peak Member has a maximum thickness of about 1,300 feet in the southeastern part of the basin, thinning toward the margins. More than 40 trona and trona-halite beds have been recognized, with 25 of these beds exceeding 4 feet in thickness and most covering more than 100 square miles in areal extent.

Activity

Presently, there are five active companies mining trona, one company that processes sodium products only, and several companies and individuals that hold undeveloped sodium leases within the Basin. Only Rhône-Poulenc (Stauffer), Texasgulf (TG), and FMC mining operations are within the resource area. Average annual combined trona production from the four mines within the resource area is about 13 million tons. Federal trona production averages about 35 percent of the total trona production. Map 66 shows mine sites and permit areas within the resource area. Map 3 shows the Known Sodium Leasing Area and areas of sodium development potential.

In the Eden-Farson area, black trona water, consisting of organic acids dissolved in a sodium carbonate solution, occurs within the Wilkins Peak Member (Map 3). Sodium from the "black water" is potentially economic to recover.

Sodium Development Potential

The most likely area for any future sodium leasing is within and around the Known Sodium Leasing Area, and near the Eden-Farson area for black trona water. These brines have not been developed in the past, but the resource area presently has six prospecting permit applications to explore these brine deposits. There are also four prospecting permit applications to explore for trona along the eastern

edge of the Known Sodium Leasing Area. A new trona mine (Wold) is being developed immediately outside of the Resource Area. Methods of obtaining a Prospecting Permit and Exploration License were discussed in Appendix 7-8 of the Draft EIS. Sodium is leased by procedures outlined in Appendix 7-9 of the Draft EIS.

Oil Shale

Oil shale areas of interest in southwestern Wyoming lie within the Green River and Washakie Basins. These areas are presently withdrawn from locatable mineral entry to protect the oil shale resource. Although the oil shales within these basins are of lesser quality than Colorado oil shales, they are nevertheless as important; some of these oil shale beds contain several million barrels of oil per square mile (Trudell, et al. 1973).

Oil shales occur in the three members of the Green River Formation (Figure 11) and are attributed to the existence of Lake Gosiute. Three major depositional cycles are recorded during its existence. The first stage lasted about one million years and represented a fresh water environment in which the Tipton Shale Member was deposited. This shale represents the largest and richest deposit of oil shale in southwest Wyoming and is located in the deepest portion of the basin, west and southwest of Rock Springs, Wyoming (Clayton and Best 1981).

The second stage represented a closed-lake condition due to a more arid climate. The Wilkins Peak Member represents a saline environment in which many beds of trona and halite were deposited with thin lenses of oil shale. These thin lenses represent higher rainfall periods. During the final stage of Lake Gosiute, the lake expanded and again became a fresh water lake, depositing the Laney Shale Member. The oil shale deposits of the Laney are the richest in the Washakie Basin and are the result of lake deposition shifting from the Green River Basin into the Washakie Basin (Roehler 1965).

Resource Potential

The Green River and Washakie Basins contain approximately 300 billion barrels of oil shale. Of this, about 30 million barrels are considered to be high grade, yielding between 25 and 65 gallons of oil per ton. These oil shales have not been leased, nor have they received major attention from industry, primarily due to high development costs of underground and strip mining methods. However, numerous in-situ research projects have been conducted over the years and have provided positive results for future extraction of this mineral resource.

No oil shale leasing regulations are in force. The Big Sandy/Salt Wells MFP recommends revocation of the oil shale withdrawal(s); this recommendation is still under consideration.

Locatable Minerals

Mining claims have been located throughout the resource area (Map 67) for a variety of minerals locatable under the 1872 mining law, but no major commercial operation has been initiated. All lands with mineral entry rights are open to mining claim location unless the lands have been withdrawn from locatable mineral entry.

Resource Potential

Known types of mining claims include claims for gold, jade, building stone, pumice, uranium, beryllium, barium, strontium, and diamonds; however, a mining claimant is not required to identify the mineral(s) being prospected at the time of location. None of these claims are now under production. Minerals identified in the planning area which have not to the present been produced in commercial quantities are zeolite, gold, uranium, jade, building stone, pumice, barium/strontium, and titanium. The potential for the occurrence of diamonds exists within the planning area, although none have yet been identified. The rock type at the Leucite Hills is almost identical to deposits in the Kimberly region of Western Australia which host commercial diamond deposits.

Large deposits of zeolite occur in the Bridger Formation within the Washakie Basin. These deposits are located within an oil shale withdrawal and are not subject to location under the mining laws while the withdrawal is in effect.

Gold claims are located in Precambrian rocks along the Wind River Front, and in deposits in Tertiary rocks near South Pass. Exploration has occurred in these formations, but no production has occurred.

Uranium is the only locatable mineral known to have been mined commercially in the resource area, and that activity was short lived. A large number of uranium claims have been staked, and prospecting has occurred within the Ericson and Blair Formations on the Rock Springs Uplift. Commercial operations were never started, and the claimant abandoned the claims. Uranium was commercially mined in the northeastern part of the resource area, for a short period of time.

Jade has been found in Precambrian rocks near the northern boundary of the planning area, but no claims are currently under development.

One building stone claim exists and is currently under contest by the BLM in the Natural Corrals withdrawal.

Seven placer claims have been located for pumice in the area of Zirkel Mesa. Although plans and notices have been received by the BLM concerning these claims during the last several years, no commercial production is known to have occurred off of these claims.

A small number of barium/strontium claims have been located on Aspen Mountain, but no development has occurred and their potential is unknown. This area also has potential for disseminated gold deposits.

Small deposits of titanium-bearing sands exist in the general area of Red Creek, Salt Wells Creek, and Black Butte. These deposits are not economic because the titanium is not extractable with present technology.

Salable Minerals

Salable minerals include sand, gravel, topsoil, boulders, riprap, mossrock, flagstone, volcanic rock, granite, sandstone, shale, limestone, and borrow material. Sand, gravel, and fill material is used by the Wyoming Highway Department; by other Federal, State, and local agencies; and by private contractors and homeowners on roads, highways, and construction projects. Mineral materials are disposed of to public agencies under a Free Use Permit, with disposals to the Federal Highway Administration for federally aided highways done under a Title 23 appropriation. Other types of disposals are sales of sand, gravel, mossrock, and flagstone. In general, it is Bureau policy to facilitate mineral material disposals in cases where it would promote better public road systems, oil and gas roads, other public projects, and private uses.

Resource Potential

Areas with sand and gravel potential are shown on Map 68. Most of the major gravel deposits in the planning area occur in or near the

Green River and Blacks Fork, or at outcrops of the Bishop Conglomerate. Other small deposits of gravel occur scattered across the planning area. The areas of greatest potential development are the area near the Green River, Zirkel Mesa (for hard volcanic rock), and outcrops of the Bishop Conglomerate.

Geologic Hazards

Several types of geologic hazards are present in the planning area. Hydrogen sulfide, earthquake, and landslide hazards are of primary concern; but locally, windblown deposits and subsidence hazards exist. Geo/Resource Consultants (1984) prepared an analysis of these hazards, with the exception of the hydrogen sulfide hazard.

Active faults, hydrogen sulfide producing wells, landslides, and windblown sands are shown on Map 62. Hydrogen sulfide is present with the hydrocarbons in some deep producing oil and gas wells. Exposure to small quantities can cause death. Additional discussion of this hazard occurs in Chapter 4 and a risk analysis of exposure was presented in Appendix 7-6 in the Draft EIS.

Active faulting is limited to the perimeter of the planning area, and historical seismicity shows no major earthquakes within the planning area. However, earthquakes in adjacent regions may directly affect this area.

Landslides are relatively scarce in the planning area, due to the relatively arid climatic conditions and the competent rocks underlying most steep slopes. Some unstable slopes are located in the south, in poorly consolidated glacial deposits and on steeper margins of gravel-capped buttes and mesas such as Little Mountain.

Windblown sand deposits occur throughout the central part of the planning area. The Killpecker dune field encompasses about 170 square miles, extending beyond the planning area boundary. Prevailing wind direction is from the west-northwest and dune migration follows prevailing winds. Hazards are increased when dunes are migrating.

Subsidence may result from past underground coal mining activity, in local areas. Cone-shaped depressions typically form directly over mined-out areas when subsidence occurs. Land use planning can effectively minimize this hazard.

No volcanic hazards exist within the area, according to the State of Wyoming Geological Survey (Wyoming 1994).

OFF-ROAD VEHICLES

The planning area currently uses two off-road vehicle (ORV) designation plans that were developed for the Big Sandy and Salt Wells Resource Areas (Map 50). The designations have been instituted for resource protection of soils, vegetation, wilderness, wildlife, and water. Only the Sand Dunes ORV play area carries an open ORV designation; all other areas are either closed or limited with various restrictions.

Off-road vehicles are many and varied; the four-wheel drive is the most common. The majority of these vehicles are "stock" pickups which are used on and off-highway. Much of the off-highway use of these vehicles is not recreation related. Local ranchers use them extensively in their operations; oil companies, surveyors, and seismograph companies also make heavy use of these vehicles. Firewood gathering is another use which greatly adds to off-road travel. Four-wheel drive use by hunters is the biggest ORV impact in the planning area. Recreational use of these vehicles in the planning area is estimated at 6,170 visitor days per year.

Other types of off-road vehicles which are commonly used in the planning area include snowmobiles, motorcycles, jeeps, all-terrain vehicles, dune buggies, and mountain bikes.

Snowmobile use is on the increase, especially in the Wind River Front Area. This is the only area of sufficient snow depth to encourage snowmobile use. Snowmobile season runs from December to March and is not solely a recreational endeavor as many ranchers, resort owners, and summer residence owners use snowmobiles to perform chores and access their property. Snowmobiles cause very little resource damage unless they are misused to chase wintering wildlife.

The Continental Divide Snowmobile Trail runs for about 8 miles on the planning area across the northern boundary near the Bridger-Teton Forest. There is one organized snowmobile club in Rock Springs that has "adopted" a portion of this trail. Other snowmobile use occurs on unplowed roads or cross country. Most snowmobile use comes from Rocks Springs, Pinedale, Lander, and Green River.

Use of mountain bikes is becoming more popular. Hundreds of miles of dirt, gravel, and two-track roads are available for riding. Dune buggies, sand dragsters, and motorcycles are free to explore the entire 10,390-acre Greater Sand Dunes ORV play area. Visitation to this area runs around 3,620 ORV visits per year.

RECREATION

Recreation activities available on BLM-administered lands in the planning area are many and varied. A brief listing includes stream and river fishing; big game hunting for elk, deer, antelope, and bear; small game, upland bird, and waterfowl hunting; river rafting and canoeing; swimming; camping; backpacking; horsepacking and riding; cross-country skiing; snowmobiling; dirt bike and other ORV use (dune buggies, etc.); mountain biking; rock and petrified wood collecting; sight seeing of historic trails and places; wild horse viewing; and wildlife viewing and general photography. The season of use for the planning area is year round; there are recreation activities for any season of the year.

The recreation resources of the planning area are mostly dispersed. The major recreational boundaries of the planning area include Flaming Gorge National Recreation Area, the Green River, and the Wind River Front. Major recreation locations include the Greater Sand Dunes Area, the Oregon Buttes, 14-Mile recreation site, the Oregon Trail and its variant routes, Three Patches Picnic Area, and Little and Pine Mountains.

Public lands within the planning area provide about 82 percent of the elk hunting, 64 percent of the deer hunting, 75 percent of the antelope hunting, 65 to 70 percent of the sage grouse hunting, 15 percent of the moose hunting, and 35 percent of the camping that occurs in the area.

There are two Special Recreation Management Areas (SRMA) in the planning area: 1) Greater Sand Dunes (41,640 acres) (refer to Greater Sand Dunes ACEC) and 2) the Oregon Mormon Pioneer National Historic Trails (315 miles). These areas receive the bulk of the planning area's recreation use. A complete discussion of the Greater Sand Dunes area can be found in the Special Management Area descriptions. A complete discussion of the Oregon Mormon Pioneer National Historic Trails special recreation management area (SRMA) can be found in the Oregon Mormon Pioneer National Historic Trails Management Plan (USDI 1986a and Cultural section). The plan can be found in any office of the Rock Springs, Rawlins, and Casper Districts. The SRMA is managed for a range of visitation intensities from dedicated trail buffs in four-wheel drive off-road vehicles to the transient visitor in a family vehicle simply passing through the area.

The 14-Mile and Three Patches recreation sites are developed sites. Plans are pending to develop the Sweetwater River Bridge Campground and Guard Station Campground as well as to expand the off-road vehicle parking/camping area in the Sand Dunes. The planning area also has 22 semi-developed sites, 8 sites that are managed by other entities, 11 undeveloped sites, and numerous popular use areas. Complete information is on file in the Green River Resource Area office.

The 14-Mile Rest Area is located approximately 14 miles north of Rock Springs on Highway 191. The site is primarily a rest area along the highway and consists of 6 picnic tables and sun protection covers, a vault toilet, barbecue grills, trash cans, short hiking trail, and a small spring-fed pond. The site is for day use only and no fee is charged. Hiking, fishing, and picnicking are the primary activities at the site.

Three Patches Campground and picnic area is located approximately 15 miles south of Rock Springs on Aspen Mountain. There are 7 camping and picnic sites, 2 restrooms, and an open play area. The site is used primarily for camping and picnicking and is handicapped accessible.

The Sweetwater Bridge Campground accommodates approximately eight sites; developments include a one-vehicle bridge over the Sweetwater River and one vault toilet. Activities at the site include camping, picnicking, hiking, rock scrambling, and fishing.

The South Pass Cross-Country Ski Trail is located in the South Pass area and is a groomed cross country ski trail about 6 miles long. No other developments are present.

The Blucher Creek Campground is located near the Wind River Front. The area is used by campers, hunters, fishermen, and snowmobilers as a dispersed, undeveloped area.

The Tailrace Campground is located on the Green River below Fontenelle Reservoir. The area is utilized for camping, fishing, and boat launching.

The Continental Divide Snowmobile Trail begins at the Rock Shop on South Pass and passes through adjacent forest lands into the bordering Pinedale Resource Area. The trail is groomed, with minimal facilities. The only improvements on the trail are the bridge and the vault toilet at the Sweetwater Bridge Campground, and a pit toilet at the Blucher Creek Campground (Map 22).

The Continental Divide National Scenic Trail was established by Congress in 1978. The trail crosses about 153 miles of the planning area, including 108 miles of BLM-administered public land, 35 miles of private land, and 10 miles of state land. The Forest Service published a comprehensive management plan for the trail in late 1985. The plan set broad goals and policy for local trail management.

The trail route generally follows the Continental Divide south from the Forest Service boundary to the Oregon Buttes. At this point, the Divide and trail split, with one segment generally following the Honeycomb Buttes WSA northern boundary to the Rock Springs/Rawlins District boundary. This is the route that has been identified for inclusion into the National Trail System. There are possibilities to establish an "unofficial" hiking trail that heads south to the Leucite Hills area and then proceeds southeast to the district boundary.

Approximately 1,500 visits occur annually on the Continental Divide National Scenic Trail. Every year a few hardy souls pass through the planning area, traversing the entire trail from Canada to Mexico, but most visitors are casual sightseers, hunters, or snowmobilers. Much of the trail traverses lands under checkerboard ownership. Access through private and state lands would be necessary for Canada-to-Mexico trail trekkers.

The Green River begins above Fontenelle Reservoir and flows in a southerly direction through the Seedskadee National Wildlife Refuge and the City of Green River into the Flaming Gorge Reservoir. Recreational activities include camping, hunting, river rescue training classes, rafting, canoeing, wildlife viewing (especially in Seedskadee), fishing, picnicking at Weeping Rock and Slate Creek, historical tours (both by water and land), general unstructured recreation, sightseeing (e.g., walking, driving, floating), bicycling, and rockhounding. The Green Belt Task Force is working towards recreational improvements.

The Big Sandy River flows into the planning area from the Bridger-Teton Forest boundary and continues westward until flowing into the Green River. The upper reaches of the Big Sandy, particularly where it joins the forest boundary, provide outstanding recreational, historic, and scenic values.

Numerous popular undeveloped sites are present in the planning area. They are generally small sites located along streams and rivers that receive moderate seasonal use. Facilities are not provided at any of these sites. Table 3-12 lists the sites, their location, and the predominate activity associated with each site.

Several other recreation sites are not managed by the BLM but are administered by other entities. These R&PP sites are on BLM-administered land but are managed under leases of the R&PP Act. They include the Pioneer Trails Picnic Grounds, PP&L recreation site, Sweetwater Trap Club, an archery range, and a model airplane landing strip.

Visitor use in the planning area totaled 371,739 recreation use days in 1991. Table 3-13 shows all recreation visitor use in the planning area broken down by activity according to the 1990 Recreation Management Information System, Wyoming Game and Fish Department Annual Harvest Reports, and Flaming Gorge National Recreation Area visitor use data.

Special recreation permits are required for all commercial use, major competitive recreation events, and when necessary, to meet management objectives in special recreation management areas (43 CFR 8372).

Access to recreation areas is mostly through existing roads and trails including the Tri-Territory Loop, the Lander Road, Fort LaClede Loop, the Firehole-Little Mountain Loop, and the Flaming Gorge Scenic Loop.

BLM initiatives such as Recreation 2000, Fish and Wildlife 2000, and the Adventures in the Past programs are gaining national recognition. Visitors are discovering the unique and valuable resources on BLM-administered lands in the area. People are interested in visiting the hundreds of miles of historic trails. Congress is moving towards designating wilderness in the area that would attract visitors who seek solitude and opportunities for unconfined recreation. The area is nationally recognized for its outstanding hunting and fishing opportunities. The backcountry byways program would encourage motorists to travel over hundreds of miles of BLM roads passing by and visiting the diverse and unique resources that these lands have to offer.

The demand for existing recreation facilities and recreation activities currently exceeds supply and demand is expected to increase in the future.

Recreation Opportunity Spectrum

Public lands are managed to provide a broad spectrum of recreational opportunities. The recreation opportunity spectrum system provides the BLM with a framework for determining existing outdoor recre-

ation opportunities and management potential, based upon a combination of activity, setting, and experience.

Use of the recreation opportunity spectrum provides for establishment of outdoor recreation management goals and objectives for specific areas, provides analysis of the impact of proposed resource management actions on available recreation opportunities, provides for monitoring in terms of established standards for recreation experience and opportunities settings, and provides for specific management objectives and standards for project plans.

The recreation opportunity spectrum is divided into six management classes which are described in Table 3-14 and shown on Map 21. The recreation opportunity spectrum system describes probable physical settings, experiences, and activities for each class and identifies where these combinations occur within the planning area, but also allows flexibility. The use of this system on public lands will help better recognize and meet the public's growing demand for a wide variety of recreation activities and settings within the planning area.

SOCIOECONOMICS

Introduction

As you read this section, you will see different terms used for geographic areas. These terms are "the Planning Area" which refers to BLM-administered public lands within the Green River Resource Area; "Sweetwater County" referring to all lands within the County boundary regardless of ownership; and the "5-county region" which refers to Sweetwater, Uinta, Lincoln, Sublette, and Fremont counties. The reason why socioeconomic analyses are done for the 5-county region is because the Green River Resource Area includes portions of all 5 counties (Map 69).

The Green River Resource Area includes portions of five counties: Sweetwater, Fremont, Sublette, Lincoln, and Uinta. All socioeconomic analysis is for the 5-county region of Sweetwater, Fremont, Sublette, Lincoln, and Uinta Counties. The largest communities in the Resource Area are Rock Springs and Green River. Other populated areas include Superior, Reliance, Eden-Farson, Jamestown-Rio-Vista, Point-of-Rocks, Table Rock, Bitter Creek, Burntfork, Lonetree, and McKinnon. Selected socioeconomic tables are presented in Appendix 10. Other economic tables, graphs, and charts which were used for the analysis in the document are on file at the BLM Green River Resource Area in Rock Springs, Wyoming.

Of all the sections of the affected environment, the most difficult to accurately describe is socioeconomics. The economy of any geopolitical area can change dramatically and rapidly because of dozens of factors. In the period of writing this RMP EIS (1989-1994) some events outside of BLM control which have affected the economy of the Green River Resource Area include:

— Changes in the world trona market prices have caused both upturns and downturns, affecting the local economy.

— A proposal for a new trona mine south of Green River has led to intensive study about growth.

— A boom in natural gas has led to intensive exploration and development resulting in new fields being discovered.

— All development and proposed development has led to a housing shortage in the Resource Area.

— Industrial development, especially in the minerals industry, has increased employment, increased population, which has a ripple effect of raising personal income and at the same time putting more demands on local government infrastructures.

BLM is aware that management of public lands can directly affect local economies both positively and negatively. Communication and coordination with local governments, industry, and affected publics is constant.

About 81 percent of the Green River Resource Area is in Sweetwater County. The remaining 19 percent is in Uinta, Lincoln, Sublette, and Fremont counties. The economy of Sweetwater County by far predominates for the geographic region comprising the Resource Area.

Sweetwater County tax income, valuation, and employment are shown in selected charts and tables in Appendix 10. The minerals industry (coal, gas, and trona) vastly exceeds the other economic sectors such as service, government, agriculture, and recreation in terms of employment, property tax valuation, and revenue for Sweetwater County.

Taxable Property Valuation

The property assessments used in this report are for 1989/1990. Annual assessed value of taxable property is based upon the property and production totals from the year prior to the year of the assessment. Minerals are assessed by the State at 100 percent of the market value of production. However, most real property is assessed at 25 percent of its 1967 market value which equaled about 8 percent of current market values in 1987 and 1988 and equaled 9.5 percent of current market values in 1993 and 1994.

Total Gross Valuation

The total gross ad valorem valuation of taxable property in the region in 1990 was about $2.5 billion, about 7 percent higher than in 1989. While the value of motor vehicles and private railroad cars decreased, the average value of other taxable property increased.

Assessed Valuation

The region's total 1990 mineral assessment for 1989 production was $1.8 billion compared to a 1983 assessment of over $1.95 billion. The region's highest assessed values occurred in 1985 at over $2.2 billion. The 1989 oil output was assessed in 1990 at over $391 million, down almost 50 percent from the 1983 valuation of 1982 production. The decline in oil values began in 1986 following upward movements in these values in 1984 and 1985. The assessed value of oil in 1985 was slightly under $794 million.

Natural gas production for 1989 was assessed at $596 million in 1990. This compares to a peak year 1985 assessment of over $1 billion. Gas values for the 5 years preceding 1988 all exceeded the 1990 assessment.

The assessed value of coal production fluctuates from year to year. The coal assessment topped $297 million in 1990, down about $61 million below the 1986 assessment. Of the last 7 years, 1986 had the highest assessment, over $359 million on 1985 production.

The 1990 assessed value of 1989 trona production reached $151 million. Miscellaneous minerals produced in the region in 1989 were assessed in 1990 at $372,000, substantially below such assessments in most of the preceding years.

Other Taxable Property

Taxable property accounts for the bulk of taxable valuation. This category includes minerals and utilities as well as other real and personal property. Other real property includes land and improvements, town lots and improvements, and commercial/industrial/

other land and improvements. Personal property includes industrial plants and equipment, business and commercial property, and transportable homes.

Taxes

The following discussion will cover four types of taxes which provide revenue to the 5-county region: taxes on assessed property values (ad valorem), severance taxes, sales taxes, and use taxes. Assessed property values have been discussed in the Taxable Property Valuation section. Sales taxes are based on the sales price of items sold within the state and counties.

The State use tax is imposed on purchases made outside a taxing jurisdiction for first use, storage, or other consumption within that jurisdiction. Thus, the use tax prevents a person from avoiding sales tax or paying a lower tax rate by making purchases outside of the taxing jurisdiction where first county use, storage, or consumption will occur.

Ad Valorem Taxes

Taxes levied on all taxable property in the 5-county region totaled over $157 million in 1990, up about 2 percent from 1988. Taxes on private railroad cars declined to about $127 thousand, almost about 2 percent below 1988. Motor vehicles returned over $7.7 million, up about 14 percent over 1988. However, on average, there was a 2 percent increase in taxes collected on other property in the region, increasing these collections to more that $149 million in 1990. Ad valorem production taxes in mineral production are the major source of revenues to the counties.

Severance Tax Payments

Severance taxes are collected on all produced minerals on the basis of their sales value, which is the same value as used for ad valorem taxes. The severance tax rate for conventional oil and gas is 6 percent, for surface mined coal it was 8 percent, trona 4 percent, and other minerals such as sand and gravel is 2 percent. The total severance tax for 1989 production in this 5-county area is $92.7 million, natural gas $35.7 million, coal $25.2 million, crude oil $23.5 million, trona, $8.3 million, with Sweetwater County being the major contributor for all four commodities. Data were provided by the Wyoming Department of Revenue and Taxation, 1990 for production in 1989.

Sales Tax Collections

Of the total sales taxes collected in fiscal year 1990, a total of $17.6 million was collected in Sweetwater County. Fremont County accounted for $7.2 million and Uinta County roughly $6 million. Lincoln County collected about $3 million and Sublette County over $1.2 million. Over $15 million of the region's fiscal year 1990 sales taxes were collected from the retail trade sector. The service sector was next highest with $3.8 million.

Use Taxes

In fiscal year 1990, the region collected slightly less than $8 million in use tax, up about 6.4 percent from fiscal year 1989 collections. Of the total collected, Sweetwater accounted for $4.5 million. Uinta collected over $1.6 million and Lincoln over $1.1 million with the remainder provided by Fremont and Sublette counties. Almost $3.9 million of the region's use tax was collected from the mining sector, with public administration and transportation providing $1.4 million and $1.2 million, respectively. Contributions by the region's other economic sectors totaled less than $1 million each (collectively, totaled $2 million).

In Lieu Tax Payments

Because land held by the federal government is not subject to local government land taxes, the federal government makes entitlement land payments to local governments in lieu of tax payments. In addition, the federal government shares the royalty received from the sale of leased minerals on federal lands, which is primarily oil, gas, coal and trona in this area. There are also returns to the counties for the sale of timber on federal lands. In fiscal year 1990, in lieu tax payments to counties within the 5-county region totaled slightly more than $2.6 million, which was about 37 percent of total payments in lieu of taxes made to all Wyoming counties that year. Sweetwater County received the largest amount in the region, $925,383. Fremont County was paid $703,617 with the other 3 counties receiving less than $500,000 each. See Table 10-3 in Appendix 10 for detailed in lieu tax payment information.

The State's share of mineral royalties for the 5-county region are disbursed by the Minerals Management Service. For 1990, this was $74 million with Sweetwater and Uinta counties providing 70 percent of the total share. The State of Wyoming's total returns for 1990 was $181 million.

The State is reimbursed with a 4 percent of gross value share of the returns from harvest of timber removed from federal lands. In 1989, this amounted to $6,000 for the 5-county area on lands administered by the BLM. The total payment to these counties for 1990 was 88 percent of the 1989 total State payments, as reported by the BLM Finance Center.

Entitlement lands consist of lands administered by the Bureau of Land Management, lands in the National Forest System, the National Parks, and lands dedicated to other uses. In this 5-county region, 12.7 million acres in fiscal year 1990 were included. The BLM accounted for 72 percent and the Forest Service for 25 percent of these lands. The remainder included land administered by the Bureau of Reclamation or National Park Service, or included in National Wildlife Reserve Areas.

Population

The combined population of the 5-county region (Fremont, Lincoln, Sublette, Sweetwater, and Uinta) totaled about 108,658 in 1990, according to the Wyoming Department of Administration and Information. This is about 9,400 less than the total present in these counties in 1981. During most of the 1980s, population in the 5-county region rose, reaching over 124,348 by 1983. Poor economic conditions and lack of job opportunities in the region caused population to decline. However, the State of Wyoming is projecting a steady population increase for the region which shows a projected population of 118,700 by the year 2000. See Table 10-2 in Appendix 10 for regional population information.

This 5-county region accounts for approximately one fourth of Wyoming's total population, and this is not expected to change over the next 10 years. Sweetwater is the most populace county of the region with about 39,000 persons in 1990. Fremont was next with approximately 34,000. The number of net births to deaths in the region in 1988 was 1,206, down from the 2,354 recorded for 1980. For the 1980s, the highest net birth year was 1982 with 2,507.

Employment

General Overview

According to the Employment Security Commission of Wyoming in its publication "Wyoming Annual Planning Report, Fiscal Year 1989," the highest average annual labor force in the region during the 1980s was recorded for 1986 at slightly over 63,300. However, annual average employment (number of workers actually employed) that year totaled only 56,660, resulting in an average annual unemployment rate for the region of 10.5 percent. In 1987, the region's average annual unemployment rate rose to 11.1 percent, according to the Commission, despite a 7,424 out-migration of workers from the 5-county region between 1986 and 1987. This resulted in a total labor force of 55,600 in 1990 with 52,200 persons employed or a 6.1 percent unemployment rate as recorded in the "Wyoming Data Handbook."

As recorded in the "Equality State Almanac" by the Department of Administration and Information and the Wyoming Data Handbook (1991), the highest unemployment rates in 1990 were in Fremont, Lincoln, and Uinta counties of 7.0, 6.8, and 6.3 percent, respectively. Lincoln County's rate also had been among the highest in 1982 and 1983 at 10.8 percent and 12.4 percent, respectively. Like the State, the region's economy suffered a downturn as the result of the sudden drop in the overall price of oil in 1983 and the subsequent decline in the demand for, and the output of, domestic energy resources.

By Standard Industrial Classification

Employment reports by the Wyoming Department of Administration and Information indicate that in 1990 the 5-county region provided about 26 percent of the State's construction jobs, 37 percent of its mining positions, 25 percent of transportation positions, and approximately one-fifth of the positions in the retail, agricultural, manufacturing, wholesale, services, and government sectors. The region also provided about 14 percent of Wyoming's full- and part-time financial sector positions. This state/regional relationship is expected to show most growth in government, services, and financial sector.

Within the 5-county region, Fremont and Lincoln counties, jointly, accounted for over 64 percent of the total full- and part-time regional agricultural jobs in 1987. Over 66 percent of the region's mining and about half of its transportation and wholesale jobs were located in Sweetwater County in 1990, as were 30 to 40 percent of the jobs in most other regional economic sectors. Fremont County ranked second in the region as a source of jobs in 1987. In 1990, it accounted for 30 to 40 percent of positions in the agricultural, agricultural services, retail trade, financial, services, and government sectors and for 20 to 30 percent of jobs in the manufacturing, wholesale, and construction sectors. It is estimated that Fremont and Sweetwater counties, jointly, will continue to account for over 60 percent of area jobs through the decade of the 1990s.

The government sector was the leading supplier of regional jobs in 1990 with 11,796 or about 20 percent of the regional total. The services sector with almost 11,456 (about 20 percent) and the retail sector with about 9,695 (about 17 percent of the regional total) were next in importance. The mining sector with about 7,602 jobs and the construction sector with about 4,104 jobs accounted for 13 percent and 7 percent, respectively, of the 1990 regional total. These sectors are expected to continue to be the major suppliers of jobs in the region throughout the decade.

Annual Average Weekly Wages of Covered Employment

In 1990, Sweetwater County had the highest overall average weekly wage of the 5 counties (almost $500). Mining, transportation/utilities, manufacturing, wholesale trade, and construction were the leading sources of wages.

Income

Total Personal

In 1990, total personal income for the 5-county region averaged nearly $1.6 billion, approximately $188 million higher than in 1987. The region accounted for over ⅛ of the state's total personal income in 1990.

All counties in the region reported total 1990 personal income levels substantially above those of 1987. Total personal income in Fremont County averaged about $432 million in 1990. Approximately ¼ of the regional total originated in Fremont County in 1990, compared to over ⅓ from this county in 1980.

Sweetwater County supplied over ⅖ of the region's personal income in 1990, down slightly from 1980. Jointly, the other 3 counties (Lincoln, Sublette, and Uinta) increased their share of the regional total from roughly ¼ in 1980 to over ⅓ in 1987 and 1990. Of the 5 counties in the region, these 3 displayed the largest percentage increase in 1987 income when compared to 1980. Jointly, they provided $485 million in total personal income to the region in 1990, and $447 million in 1987 compared to slightly over $300 million in 1980.

Per Capita

The average, annual, per capita income for the 5-county region in 1990 was 14,697, up about $4,000 above 1980. This is about 11 percent less than the state's average, annual, per capita income of $16,467 in 1990. Sublette and Sweetwater counties had the highest average, annual, per capita incomes in the region.

Earned Income - Major Component of Total Personal Income

Components of earned income in the 5-county region include wages and salaries, other labor income, and proprietor's income. In 1987, wages and salaries earned in the region total over $1 billion, up 5 percent from wages and salaries earned in 1980. Wages and salaries accounted for over ⅘ of the region's total earned income in 1987.

Other labor income accounted for less than 1/10 of the region's total 1987 earned income. At over $78 million in 1987, other labor income was 4 percent less than in 1980. Proprietor's income also accounted for about 1/10 of total earned income in 1987. Totalling slightly under $113 million, it was approximately 4 percent under the 1980 total.

By Major Economic Sectors Earned income from the region's major economic sectors totaled about $1.1 billion in 1987, up about $36 million from the 1980 total. The region's major economic sectors in order of importance as sources of earned income in 1987 included: mining, government, services, transportation, construction, retail trade, manufacturing, wholesale trade, finance, and agriculture. The agricultural, manufacturing, transportation, wholesale, finance, services, and government sectors realized higher earned

income in 1987 than in 1980. The government sector led regional growth with an increase of almost 86 percent from 1980 to 1987. Manufacturing was second with a 45 percent increase followed by transportation and finance with 38 percent and 34 percent, respectively. Agriculture, wholesale, and services realized earnings increases of 15 percent to 16 percent. Earned income from retail trade in 1987 roughly equaled 1980 dollar levels, but was down measurably from levels realized in other years since 1980. Earnings from mining and construction in 1987 were about 30 percent under 1980 income levels. Income earned from construction had fluctuated during the 1980s, but in 1985 and 1986, levels had topped 1980 earnings by 66 percent and 55 percent, respectively. Conversely, mining sector income in the region had declined every year from 1983 through 1987.

Earned income from mining totaled over $285 million in 1987 compared to almost $391 million in 1980. Other 1987 earnings by major sectors include construction at about $106 million; government, over $223 million; services, almost $138 million; and transportation, about $132 million. The wholesale and retail trade sectors jointly supplied earned income of almost $127 million in 1987.

Relative to the State's Economic Sector Totals In total, the 5-county region supplied about ¼ of the 1987 earned income in Wyoming. The portion of the state's 1987 economic sector totals supplied by each of the major economic sectors in the region is: mining - 39 percent; construction - 29 percent; transportation - 26 percent; agriculture, wholesale, and retail - each 21 percent; manufacturing and services - each 20 percent; government - 19 percent; and finance - 16 percent.

The construction sector had been even more important to the state and region in years 1985 and 1986, when it accounted for 45 percent of the state's total earned income from construction activities.

By County Earned income in Lincoln, Sublette, and Uinta counties in 1987 was less than in 1986, but higher than in 1980. Fremont and Sweetwater counties had the lowest earned income in 1987 reported for any year during the 1980s. By county, the levels of earned income in 1987 (in millions) were Sweetwater - $511, Fremont - $245, Uinta - $169, Lincoln - $132, and Sublette - $47. Comparable 1980 earnings were (in millions): Sweetwater - $513, Fremont - $305, Uinta - $105, Lincoln - $102, and Sublette - $40.

Agricultural Sector

General Characteristics

The following information compares 1987 characteristics of the agricultural sector to those 5 years earlier in 1982. Later information is included where available. The number of farms totaled about 2,155 in the 5-county region in 1987, an estimated 6.5 percent increase over 1982. Total land in farms in the region in 1987 was 6,196,000 acres, up 242,000 acres over 1982. Average farm size at 18,420 acres was about 2,195 acres under the 1982 average. Less than 10 percent of the 5-county region's 2,155 farms are located inside the Green River Resource Area boundary.

Cropland in 1987 totaled 405,000 acres, down about 25 percent from the 1982 level, while farms containing cropland rose about 5.6 percent to 1,847. Total pastureland at almost 5.7 million acres was about 3 percent higher than the 1982 total.

Agricultural sales in the 5-county region totaled $103 million in 1987. Of this amount, livestock sales in the region in 1987 totaled almost $90 million, about $19 million higher than 1982 sales. Cattle/calves sales accounted for almos ⅘ of 1987 livestock sales. Sheep/lamb/wool sales equaled about 12 percent, and hogs/pigs sales provided most of the remainder. In 1987, there were about 157,000 cattle/calves, 137,000 sheep/lambs, and 4,378 head of hog/pigs sold in the region. According to the State's "BiWeekly Ag Statistics" report of September 30, 1988, estimated January 1, 1988 inventories of cattle/calves in the region totaled 238,000 head. The October 14, 1988 issue of "Biweekly Ag Statistics" estimated January 1, 1988 stock sheep inventories in the region at 159,000 head.

Livestock Grazing on BLM-Administered Lands

The Green River Resource Area allows for up to 318,647 AUMs of active preference grazing annually. However, annual use of these AUMs by livestock owners over the past five years has averaged only 180,362 AUMs. Most of the difference between the total available AUMs and the AUMs actually used each season represents voluntary non-use by livestock operators. If the 5-year average, annual use of 180,362 AUMs is multiplied times the 1991 BLM grazing fee of $1.97/AUM, it yields about $355,313 per year in payments to the federal government (USDI 1990c).

"Wyoming Cow Country" (vol. 118, no. 4, October 1990) stated that each animal unit of livestock produced in Wyoming returned an average of $52 in direct personal income to livestock sector households in 1987. Livestock are grazed for an average of 6 months on the BLM-administered land. Therefore, if it is assumed that 6 AUMs of BLM-administered forage enables the operator to produce 1 animal unit of livestock, then 30,060 animal units of livestock could be produced each season from the 180,362 AUMs of average, annual use. Applying the $52 per animal unit, to these 30,060 animal units would result in $1,563,137 per year in direct personal income to livestock sector households. Grazing on BLM-administered land accounts for 95 percent of this income ($1,485,000). Using a multiplier of 3.32024 times each $1 of direct personal income results in an estimated $5,189,990 of total income generated annually from the current use of non-privately managed AUMs in the Green River Resource Area. About $4,931,000 of this is accounted for my BLM-administered AUMs. The multiplier is obtained from the input/output model developed by University of Wyoming.

BLM administers about 70 percent of all the land within the planning area. Most of the remainder is state or private land. The quality of the pasture on public and private land within the Resource Area varies as does the importance of public AUMs to individual livestock operators. Therefore, it is impractical to make blanket statements for the Resource Area regarding the full extent of the impacts to livestock operators from any increase or decrease in available public AUMs. The degree to which each individual operator depends upon public AUMs to sustain their livestock operations determines the magnitude of the impact to that operation subsequent to any changes in the availability of public AUMs. Thus, if a decrease in AUMs would result in an individual operator being forced out of business, the negative impacts to the individual would likely be greater than the positive benefits generated per animal unit.

Minerals

Major minerals produced in the 5-county region include oil, gas, coal, and trona. The 1990 output for these was 22,906,972 barrels; 618,964,772 MCF; 16,667,603 tons; and 16,231,527 tons, respectively.

Oil and Gas

The level of oil production has been declining in the region since 1984, when it was over 29 million barrels with 1990 production at 23 million barrels. Gas output has fluctuated in past years, but has trended upward since 1986 when output dipped to 240 billion cubic feet to 619 billion cubic feet in 1990. All counties in the region produce oil and gas, but Sweetwater and Uinta counties produce the most. Jointly, these two counties produced about ¾ of the region's oil and more than ⅗ of its natural gas in 1990.

Coal

Coal output has also fluctuated in past years. Output has bounced between about 12.8 million and 17.2 million tons since 1982. Coal is produced in Lincoln and Sweetwater counties with about 70 percent produced by Sweetwater County in 1990.

The Resource Area is estimated to have produced almost 11.9 million tons of coal in 1990 from four mines: Black Butte, Bridger, Lion, and Pilot Butte. The estimated value of this coal was about $212 million. (Coal values are calculated using a Resource Area average price/ton of $17.82.) Over 97 percent of the 1990 output and related output value is attributed to the Black Butte and Bridger mines. In addition to the direct value of the Resource Area's coal output, the indirect and induced output added to the area economy from this level of coal activity probably amounted to about $169 million in 1990 for a total area benefit of $381 million. (Source of mining multiplier (1.795145): University of Wyoming, College of Agriculture, Department of Agricultural Economics Extension.)

By 1995, a fifth mine, Deadman Wash, is expected to begin producing (about 500,000 tons of coal in 1995, valued at $9.25 million). By the year 2005, a sixth mine, Beans Spring, could be producing (initial output will be 800,000 tons in 2005, valued at $14.8 million). However, the Lion mine, which is now producing about 107,000 tons valued at almost $2 million annually, is expected to cease production in 2002. Subsequently, Deadman Wash is expected to cease production by 2007. Therefore, annual Area coal output is projected to be highest (almost 18.4 million tons, valued at $340.4 million) in 2005. By the year 2010, output will have declined to about 12.8 million tons, valued at slightly over $236 million.

Employment

Direct annual employment for the 4 mines in 1990 is reported by the State Inspector of Mines to have totaled 939 employees. About 91 percent of these workers were employed by the Black Butte and Bridger mines. In addition, about 19 persons were also employed as of December 31, 1990, in a coal coking plant in Rock Springs, Wyoming. Coke production from this plant was 76,964 tons in 1990 (Wyoming 1990).

Mine employment in 1995 could increase to 1,189 employees when the Deadman Wash mine begins production. However, employment levels in this and other mines coming on line during this 20-year period will depend to a large extent upon who receives the competitive coal leases. New independent mines may require the level of employees estimated for the expected additional mines projected in this RMP, but if leases are received by ongoing mine operators, the ongoing mines may not need as many employees for the new lease portion of their operations as this RMP projects.

However, direct employment by Area mines is expected to decline to 1,136 in 2002, reflecting the projected Lion mine closure. It will, subsequently, increase to 1,286 workers annually during years 2005 and 2006 after Beans Spring begins to operate. However, after the Deadman Wash mine closes in 2007, the Area will again have only 4 operating mines, and annual employment is expected to drop to 1,036, where it is projected to stay through the remainder of the plan period. This 1,036 annual level is almost 100 employees above the reported 1990 level. (Source of projections: Rock Springs District minerals specialists.)

Cumulative Coal Output and Value

The cumulative coal output for the Resource Area during the years 1991 through 2010 is expected to total about 325 million tons, valued at more than $6 billion. This level of coal activity and direct output value is estimated to result in an increase in total (direct, indirect, and induced) output by the Area economy over the 1991-2010 period of about $10.8 billion.

Direct coal sector household income is projected to benefit by about $1 billion over the 20 years and total area household income (direct, indirect, and induced) by almost $1.9 billion as the result of projected coal activities in the Resource Area.

Sodium/Trona

Trona is mined by five companies west of Green River in Sweetwater County. These companies process the trona into soda ash and other sodium-based products. However, only three of these companies (Rhône-Poulenc, FMC, and Texasgulf) have mining operations partially within the resource area (Wyoming Geo-Notes, No. 30, May 1991 by the Geological Survey of Wyoming; BLM Rock Springs District and Green River Resource Area Specialists).

The Rhône-Poulenc mine produces about 3.2 million tons of trona per year from the area, and the other two companies each produce 0.9 million tons. Over the 20 years from 1991 through 2010, it is estimated that these mines will have produced a total of 100 million tons of trona which will be converted into about 55 million tons of soda ash, valued at over $4.4 billion (Appendix 10-4).

Annual direct employment at the Rhône-Poulenc mine is about 539. The FMC Wyoming Corp. employs about 1,156 workers, and TG Soda Ash Inc. about 324 in their annual trona mining operations. Probably not all of the employees of FMC and TG live and work in the resource area (BLM Rock Springs District and Green River Resource Area Minerals Specialists, June 1991; Wyoming 1990). This level of annual employment is projected to continue over the life of this plan, given that the total annual trona output from these three producers remains at 5 million tons, as expected.

Wyoming is now the nation's primary producer of soda ash (90%). The demand for trona has been enhanced by the increasing use of soda ash in the manufacture of caustic soda (replacing chlorine in the process), and also as a substitute for caustic soda in some applications.

There is also a sodium-enriched brine water referred to as black trona water which contains organic materials. BWAB Inc., a Denver-based company, proposed to test the brine waters in hopes of producing soda ash. In addition, it may be possible to produce organic-based fungicides, pesticides, and pigments from the by-product of the water (Wyoming Geo-Notes, No. 30, May 1991). Currently, there are no production estimates available for the brine water development.

Recreation

Total annual direct expenditures by recreationists utilizing the Green River Resource Area in 1990 is estimated to have been slightly

over $14.85 million (Appendix 10). About 16 percent of this amount was the result of consumptive recreational activities (fishing and hunting). In addition, 84 percent of the total was expended for non-consumptive activities that involved land-based motorized recreational travel, including snowmobiling, camping, non-motorized travel, water and site-based recreation (other than fishing), and various winter sports.

Big game hunting accounted for almost $3.3 million of total direct expenditures by recreationists in the resource area in 1990.

Hunters of small game, waterfowl, and other birds are estimated to have spent about $1.4 million in the resource area in 1990.

SOILS

Soils of the planning area are generally light colored; textures and aggregate development vary. There is minimal leaching of soluble salts. Some darker colored soils, with greater amounts of organic matter, are found in areas of increased moisture due to such factors as aspect, elevation, and drainage (Map D) and Appendix 5-4.

Varying amounts of soluble salts occur in most of these soils. Soluble salt levels in some soils affect management potentials due to toxicity, reduced infiltration rates, limits on nutrient availability, and reduction of water available to plants. Salinity in the Colorado River Basin, which includes the planning area, threatens the municipal and industrial needs of over 18 million people, along with the irrigation of 2.5 million acres of cropland. Major causes of increased salinity contribution from public lands are overgrazing, off-road vehicles, and energy exploration and extraction. These activities cause compaction of the soil surface accompanied by a reduction of plant cover, which in turn leads to increased runoff carrying salt laden sediments into drainages. Controlling salinity from nonpoint sources is closely related to controlling sediment yield and runoff.

Moderately and strongly saline soils have the greatest potential for salt contribution to the Colorado River system. However, slightly saline soils which dominate the planning area also contribute large volumes of salt due to their extensive acreage. Over 50 percent of total salt yield is derived from slightly saline soils. Within the planning area, moderately saline soils are generally found along major drainages such as Bitter Creek, Big Sandy River, Green River, and Blacks Fork River.

Soils in the planning area are especially dependent on vegetative cover to prevent erosion. Vegetative cover is probably the most important management variable influencing runoff and sediment yield. Vegetation acts as a buffer between the soil surface and the surrounding environment. Ground cover and root systems anchor the soil, recycle elements, and add scarce organic matter.

Surface-disturbing activities have direct and indirect impacts on soils. Impacts are caused by such activities as geophysical exploration; construction of drill pads, roads, and other facilities for minerals operations; hazardous waste disposal and cleanup; produced water disposal; abandonment and reclamation of facilities; trenching and strip mining; landfill construction; framing; construction of powerlines, pipelines, roads, and highways; timber harvesting activities such as skidding, mechanical slash piling, road building, and vegetation removal; fence construction; planting and seeding; grazing by livestock, wild horses, and wildlife; construction of water developments and reservoirs; spraying; prescribed burning; ORV use; recreation site construction; implementation and maintenance of watershed projects and contour furrows; and wildfire suppression.

Soils especially susceptible to surface disturbing activities include unstable soils, sandy soils, and erosive soils (see Appendix 5-5).

Desert Land Entry Restrictions

The Conservation Reserve Program, authorized by the Food Security Act of 1990, attempts to remove highly erodible farm lands from cultivation. Its authority is contained in Subtitle D of Title XII of the Act. The program is administered by the Agricultural Stabilization and Conservation Service with the Soil Conservation Service providing technical support.

The Conservation Reserve Program aims to remove from farming: 1) Any cropland in Land Capability Class 6 or higher due to steepness of slope or shallow depth to bedrock (restricting soils on slopes greater than 10 percent and/or less than 20 inches to bedrock) and 2) Cropland in Capability Classes 4 and 5 (in Wyoming) that has an average annual erosion rate of more than three times that at which the soil forms (1 to 5 tons per year).

Two subsections of the Act make agricultural producers ineligible for benefits of certain USDA programs if they bring highly erodible land into cultivation without an approved conservation plan; and, if they produce agricultural commodities on wetland that has been substantially altered or drained.

Considering these goals, the public interest would not be served by allowing Desert Land Entry or by issuing agricultural leases for land of the capability classes that the Department of Agriculture is attempting to retire.

The Department of Agriculture and the Bureau of Reclamation are spending millions of dollars through the Colorado River Salinity Control program to decrease the amount of salts entering the Colorado River. "The Eden-Farson area contributes an estimated 164,000 tons of salt to the Colorado River, which represents about 2 percent of the average salt loading at Imperial Dam, California. The primary sources of salt loading are springs and seeps along the Big Sandy River below Farson. Studies have indicated that the majority of the saline seep inflow to the Big Sandy is believed to result from irrigation" (Bureau of Reclamation 1989). To release such land to irrigated cultivation would not be in the public interest.

SPECIAL STATUS PLANT SPECIES

Special Status Plant species are those which are proposed for listing, officially listed (T&E), or candidates for listing as threatened or endangered by the Secretary of the Interior under the provisions of the Endangered Species Act; those listed or proposed for listing by a state in a category implying potential endangerment or extinction; and those designated by each State Director as sensitive.

Candidate Plant Species

The Bureau of Land Management is mandated by law and policy to protect and manage threatened, endangered, candidate, and sensitive plant species and their habitat identified by the U.S. Fish and Wildlife Service. BLM is also required to protect and manage for sensitive species jointly identified and agreed to with the appropriate state agency. The State of Wyoming does not have an official list of sensitive, threatened, or endangered plant species. Currently, a single plant species, Ute Lady's Tresses (*Spiranthes diluvialis*), has been listed as Threatened in Wyoming. Several species occurring within Wyoming have been or are being considered under formal listing procedures. State and federal agencies have historically given these species special consideration until their status is fully assessed.

Complete floristic inventories are currently being conducted on a large scale in the Bureau; information available on each species

varies as do potential threats and opportunities for management and protection. A floristic survey is being conducted in the Rock Springs District from 1994 to 1996. Site specific and general inventories have been conducted for some species; however, areas inventoried, but having no candidate plants, were not mapped and/or the information was never placed in reports that could be referenced. Approximately half of the known candidate species in the Green River Resource Area have been surveyed to date. Permanent transects have been established and baseline information gathered for these species. Complete information is lacking for most of the species (Table 3-15).

Monitoring efforts for federally listed Candidate species in the Rock Springs District have been sporadic in the past. Establishment of new monitoring programs and the continuation of established monitoring efforts is occurring. This monitoring will provide managers with information regarding population dynamics and potential threats.

The information regarding the 15 individual species is a compilation of information prepared by the Wyoming Natural Diversity Database (WNDDB) (Marriott 1988) for the BLM, individual status survey reports prepared by WNDDB under contract with the BLM, subsequent unpublished field reports to the BLM by the WNDDB, and information provided by the U.S. Fish and Wildlife Service.

Of the 15 known candidate species in the Green River Resource Area, 11 are currently classified by the U.S. Fish and Wildlife Service as Category 2 under review for listing as endangered or threatened (Table 3-16). One, the small rockcress (*Arabis pusilla*), is Category 1, proposed for listing as threatened or endangered, and three are classified as Category 3c.

Meadow Pussytoes (*Antennaria arcuata*)

Meadow pussytoes is a Category 2 Candidate under review for Federal listing as either Threatened or Endangered. The Nature Conservancy ranks this plant as G2S2, very vulnerable to extinction globally and very vulnerable to extirpation statewide, due to its restricted range. Antennaria arcuata has been found in Idaho (one site in Blaine County near Carey) and Nevada (two sites in Elko County). Twenty sites are known from Wyoming, all in Fremont County. Most known locations are east and southeast of Atlantic City, while two occurrences are in the Granite Mountains northwest of Jeffrey City. Two populations are found on public land southwest of South Pass City. One population is found along Fish Creek approximately 1 mile west of Highway 28; the other is located about 1.5 miles east of Highway 28 on Pine Creek. Populations of meadow pussytoes at these sites are small compared to those near Atlantic City and in the Granite Mountains. A population adjacent to Long Slough, south-southeast of Atlantic City, may extend onto the Green River Resource Area.

Meadow pussytoes is typically found in wet meadows surrounded by sagebrush grassland. The plants occur on the drier margins of "hummocky" meadows. On more level sites with bare soil, the plants occasionally form vegetative mats. Potential habitat in the area of Atlantic City and South Pass City has been adequately inventoried, and additional survey is not a high priority.

Populations of meadow pussytoes range in size from several hundred to several thousand plants. It is unknown whether the species is increasing, declining, or remaining stable.

Small Rockcress (*Arabis pusilla*)

Small rockcress is a Category 1 Candidate species, and has been proposed for Federal listing as either Threatened or Endangered. The Nature Conservancy ranks this plant as G1S1, extremely vulnerable to extinction globally and extremely vulnerable to extirpation statewide. Small rockcress is known from only one location in the southern Wind River Range in Fremont County, Wyoming. The single known population occurs on about 6 acres of BLM-managed public land near Pine Creek.

Small rockcress is found in crevices and on sparsely vegetated, very coarse soil in granite-pegmatite outcrops surrounded by sagebrush grassland. Most granite-pegmatite outcrops in the South Pass area were surveyed in 1986 by the Nature Conservancy-Wyoming Natural Diversity Database (Marriott 1988). Other suitable habitats along the Lander Cutoff were spot-checked. No other populations were located during that survey. More plants were found in the immediate area during a later survey conducted for the U.S. Fish and Wildlife Service (Dorn 1990). The population size is estimated at 600 individuals. Motorized recreational activity and livestock grazing in the area have been identified as threats to the population. The extremely restricted geographic range of this species makes it highly vulnerable to extinction.

A Habitat Management Plan has been developed for the protection of the small rockcress and its habitat. Protective management actions include annual monitoring, road closure and fencing to protect habitat from damage by livestock and off-road vehicles. Seeds from Arabis pusilla will be collected and deposited at the Center for Plant Conservation (CPC) at the Denver Botanic Gardens. The CPC will attempt to propagate the species for plant studies and for emergency stock in the event of catastrophic destruction of the population.

General habitat management for Threatened and Endangered and Candidate Status plants is discussed in the Preferred Alternative.

William's Rockcress (*Arabis williamsii*)

William's rockcress is a Category 3C Candidate under review for Federal listing as Threatened or Endangered. The Nature Conservancy ranks this plant as G3S3, vulnerable to extinction globally and vulnerable to extirpation statewide. William's rockcress is endemic to Wyoming, and is known from 26 different locations. Populations are found in the southeast Absaroka Mountains, the north and south ends of the Wind River Range, and the east flank of the Wyoming Range west of Big Piney.

William's rockcress occurs on public land just north of Wyoming Highway 28 in the vicinity of Willow and West Willow Creek. The site just west of West Willow Creek is the type locality for the species. Habitat consists of coarse, gravelly to rocky soil; often on relatively bare ground including rodent mounds, near rocks, and other somewhat disturbed sites associated with sagebrush grassland. Some unsurveyed potential habitat remains in the southern Wind River Range, but most suitable habitat has been surveyed. Additional populations may be discovered along the east side of the Wyoming Range and the west flank of the Wind River Range.

Mystery Wormwood (*Artemisia biennis* var. *diffusa*)

Mystery wormwood is a Category 2 Candidate under review for Federal listing as Threatened or Endangered. The Nature Conservancy ranks this plant variety as G5T1Q/S1. Although this species is secure globally, this particular subspecies, or variety, is extremely rare and vulnerable to extinction. Taxonomically, there is still a question regarding its validity as a variety. Very little is known about this species.

The mystery wormwood was discovered growing in a seasonal alkali playa northeast of Rock Springs. It is endemic to the Point of Rocks, Wyoming, area. This population was last observed in 1980. A subsequent search in 1984 could not relocate these plants.

Precocious Milkvetch (*Astragalus proimanthus*)

Precocious milkvetch is a Category 2 Candidate under review for Federal listing as Threatened or Endangered. The Nature Conservancy ranks this plant as G1S1, extremely vulnerable to extinction globally and extremely vulnerable to extirpation statewide. This legume is known only from four locations in the vicinity of McKinnon, in extreme southwestern Sweetwater County, Wyoming. *Astragalus proimanthus* is found in cushion plant communities in sagebrush grasslands on rocky clay (possibly calcareous) soils. Most of the known habitat for precocious milkvetch is on public lands.

A field survey conducted for the BLM by the Wyoming Natural Diversity Database in 1989 established permanent transects in four locations for population monitoring (with the recommendation that they be read every three years). Estimates of population size at that time ranged between 1,000 to 10,000 plants. Due to its very restricted geographic range, the precocious milkvetch is extremely vulnerable to extinction. The entire species occurs within an area of less than 10 square miles.

Roads, off-road vehicles, oil and gas exploration and development, range projects, and garbage dumps are threats to the precocious milkvetch. Several off-road vehicle trails and two dumps (one recently reclaimed) are currently located near populations. The status survey results indicated that no surface development should be allowed in the population areas due to the extreme vulnerability of the species. However, no data are available on population trends.

Although no trend data are currently available, the populations do not appear very vigorous, especially the population around the reclaimed McKinnon dump. During the summer of 1993, BLM personnel noticed significant surface disturbances of a portion of the habitat due to off-road vehicles and livestock trailing. In 1994, the population suffered a loss of 12 percent. A Habitat Management Plan is currently being prepared by the BLM to provide management guidelines for the protection of this species.

Ownbey's Thistle (*Cirsium ownbeyi*)

Ownbey's thistle is a Category 2 Candidate under review for Federal listing as Threatened or Endangered. The Nature Conservancy ranks this species as G3S1, vulnerable to extinction globally and extremely vulnerable to extirpation statewide. This species is endemic to northwest Colorado, northeast Utah, and southwest Wyoming. It is known only from two sites in Wyoming.

In the Green River Resource Area, Ownbey's thistle has been found on the east side of the Flaming Gorge National Recreation Area, and along the Currant Creek drainage. Its habitat consists of steep, shaley soils associated with desert shrub communities.

Due to its extreme rarity, surface disturbance could significantly impact the species. The plant's spiny nature makes it unpalatable as forage for livestock. However, herbicide spraying could negatively impact the species. Construction activity associated with oil and gas, range projects, and other project developments potentially threatens the plant's habitat. A proposed general floristic inventory of this area in 1995-96 may reveal more occurrences of this species.

Wyoming Tansy Mustard (*Descurainia torulosa*)

Wyoming tansy mustard is a Category 2 Candidate under review for Federal listing as Threatened or Endangered. The Nature Conservancy ranks this plant as G1S1, extremely vulnerable to extinction globally and extremely vulnerable to extirpation statewide. This species is known from eight sites: six in the Absaroka Mountains (Park and Fremont counties); and one population at Pine Butte and one at Lion Bluffs (Sweetwater County), Wyoming. The Sweetwater County populations are located on both BLM and private lands in the Resource Area.

The Sweetwater County populations are interesting in that they are widely disjunct from the main populations in the mountains of northwest Wyoming. The high, north-facing sandstone bluffs at Pine Butte and Lion Bluffs rise from the surrounding dry sagebrush grasslands and provide the cool, moist microsites the species requires. The plants grow close to the base of the bluffs in sandy soil. It is surmised that the species is a relic of a cooler climatic period, and has retreated to the only available habitat in the area which suits its needs.

Field survey by the Wyoming Natural Diversity Database in 1991 revealed the population at Lion Bluffs, at the northeast end of Quaking Aspen Mountain. The study encompassed all appropriate areas displaying potential habitat in the study area. However, unsurveyed potential habitat may exist on the east slope of the Wind River Range.

The populations are all very small and do not appear to be thriving. Its limited range, small populations and lack of vigor make the Wyoming tansy mustard very vulnerable to extinction. At Pine Butte, surveys conducted in 1987 and 1991 observed less than 200 individuals in the habitat of under 10 acres. The population at the Pine Butte site is relatively inaccessible. Population information is not available for the Lion Bluffs site. This population of the Wyoming tansy mustard is vulnerable because of its location on Quaking Aspen Mountain. The single identified immediate threat to this population is mineral location.

Initial taxonomic studies of the species at the Sweetwater County locations led to some uncertainty whether these plants were members of *Descurainia torulosa* or a similar species. Based on the limited material available, the conclusion was that these populations are indeed members of *D. torulosa*. Additional specimens from throughout the range of the species, as well as further taxonomic studies, may clarify this taxonomic question. The Wyoming Natural Diversity Database suggested that until the taxonomy of the species is more conclusively determined, the species should be assigned a Category 2 status. This was done under the September 30, 1993 Notice of Review.

Due to its extremely specific habitat requirements and small populations, it is unlikely that this species will be found to be common under current climatic conditions. It remains very vulnerable to extinction. The proposed candidate plant ACEC will provide protective management designation for this species.

Large-Fruited Bladderpod (*Lesquerella macrocarpa*)

The large-fruited bladderpod is a Category 2 Candidate under review for Federal listing as Threatened or Endangered. The Nature Conservancy ranks this plant as G2S2, very vulnerable to extinction globally and very vulnerable to extirpation statewide. Prior to 1992, the large-fruited bladderpod was thought to be endemic to the northern Great Divide Basin in Sweetwater and Fremont counties,

Wyoming. However, during a vegetative survey, it was located near the town of Opal in Lincoln County, Wyoming (Culwell 1992).

Most of the known large-fruited bladderpod populations occur on public land northeast of Steamboat Mountain on Bush Rim, near Continental Peak, and in the Oregon Buttes area. The species has been collected from sparsely vegetated clay flats, benches, slopes, and hills. It commonly grows in association with Gardner's saltbush between 7,200 and 7,700 feet in elevation.

Sites surveyed in 1981 ranged in size from 80 to over 1,000 acres, with estimates ranging from several hundred to tens of thousands of plants. Large-fruited bladderpod population sizes fluctuate from year to year, apparently in response to moisture availability. During dry years, when populations are small, the species is much more vulnerable to adverse impacts. Its overall limited range and small population sizes in dry years qualify *Lesquerella macrocarpa* as a Candidate species. No threats are known at this time. A monitoring program was established in 1988 by the Wyoming Natural Diversity Database (Marriott 1988), but was not considered a good baseline because of the effect of drought conditions on the population size. A status survey was conducted for this species in cooperation with the Rawlins District BLM in the summer of 1994.

Contracted Indian Ricegrass (*Oryzopsis contracta*)

The contracted Indian ricegrass is a Category 2 Candidate species under review for Federal listing as Threatened or Endangered. The Nature Conservancy ranks this species as G2S2, either rare, or local in its range, or found locally in a restricted area. This species is a regional endemic, found in southern Wyoming and northern Colorado.

The contracted Indian ricegrass is generally found in basin areas on dry, shallow, or sandy soils. Within the Resource Area, the contracted Indian ricegrass has been found southeast of Steamboat Mountain, Stagecoach Draw, and the Oregon Buttes area.

Prior to 1993, this species was known from only 12 locations in Wyoming and Colorado and was ranked G2, indicating it was imperiled throughout its range. Field surveys throughout the Rock Springs District in 1993 and 1994 resulted in discoveries of numerous new locations of the species. A status survey for the species in 1994 by the Wyoming Natural Diversity Database showed the species is widespread in central and western Wyoming. Contracted Indian ricegrass is palatable to livestock and could potentially be threatened on a local level by overgrazing or large-scale surface disturbances. However, due to its wide range, numerous occurrences, and low threats, the U.S. Fish and Wildlife Service is considering downgrading the contracted Indian ricegrass to Category 3C.

Swallen's Mountain Ricegrass (*Oryzopsis swallenii*)

This species is a Category 3C Candidate under review for Federal listing as Threatened or Endangered. The Nature Conservancy ranks this plant as G5S1, secure globally, but extremely vulnerable to extirpation statewide. The single known occurrence in the Green River Resource Area is in Bird Canyon, about one mile east of the Green River.

Swallen's mountain ricegrass is found on rocky slopes and rocky knobs in sandy areas, especially on calcareous soils. Its elevational range is between 6,600 and 7,100 feet.

No surveys are known to have been conducted for this species in Wyoming.

Stemless Beardtongue (*Penstemon acaulis*)

Stemless beardtongue is a Category 2 Candidate under review for Federal listing as Threatened or Endangered. The Nature Conservancy ranks this plant as G3S1, vulnerable to extinction globally and extremely vulnerable to extirpation statewide. Stemless beardtongue is endemic to Sweetwater County, Wyoming; northeast Utah (Daggett County); and northwest Colorado (Moffat County). Two varieties are recognized: var. *acaulis* is found in all three states, while var. *yampaensis*, with broader leaves, occurs in the eastern portion of the species range in Colorado and Utah. The stemless beardtongue is known from 5 sites in Wyoming, all in extreme southwest Sweetwater County near McKinnon, Wyoming.

Habitat consists of semi-barren substrates in pinyon-juniper and sagebrush-grassland communities. In Wyoming, stemless beardtongue occurs on rocky, sparsely-vegetated sites with sagebrush and cushion plants. Its elevational range is 5,900 to 7,200 feet. No records are available concerning potential habitat and areas surveyed in the past. Similar habitat (coarse outwash) occurs at other sites in the area.

Penstemon acaulis appears to be restricted in its overall range, and is infrequent to common where it occurs. No quantitative data on population size or trend are available. Management plans include a future status survey for this species and monitoring program.

Tufted Twinpod (*Physaria condensata*)

The tufted twinpod is a Category 3C Candidate under review for Federal listing as Threatened or Endangered. The Nature Conservancy ranks this plant as G2S2, very vulnerable to extinction globally and very vulnerable to extirpation statewide. The tufted twinpod is endemic to southwest Wyoming, currently with 18 known occurrences in Wyoming. Its single known location in the planning area is east of LaBarge.

The tufted twinpod's habitat consists of sparsely-vegetated shale slopes and ridges. It has been found growing between 6,000 and 7,600 feet in elevation.

This species was originally studied for the BLM in 1981, but the study concentrated on taxonomic differences between this species and others in the area. Survey routes of collections were not documented, and the entire range of the species was not mapped. Complete information concerning distribution, and population sizes and trends is lacking. Due to the lack of immediate threats to the species, the U. S. Fish and Wildlife Service downgraded the twinpod to 3C status (Notice of Review 1993). Much of its potential habitat has not been surveyed to date, and it is likely that more of the species will be found during the general floristic inventories of the Rock Springs District.

Green River Greenthread (*Thelesperma caespitosum*)

The Green River greenthread is a Category 2 Candidate under review for Federal listing as Threatened or Endangered. The Nature Conservancy has ranked this plant G1S1, extremely vulnerable to extinction globally and extremely vulnerable to extirpation statewide. The species is known from two locations in Wyoming and one historical occurrence in northeastern Utah. Both Wyoming locations occur within the Resource Area on escarpments above the Green River about 2 miles southeast of the town of Green River.

The Green River greenthread was discovered in 1988 growing on a ridge of barren white shale derived from the Green River Formation. This population is located in the vicinity of a heavily used

recreational area where individual plants have been dislodged by off-road vehicle activity. A second population was discovered in 1994 during a status survey by the Wyoming Natural Diversity Database. The newly found occurrence has not been directly impacted, but exists in an area of past drilling activity.

Due to its extreme rarity, impacts from seismic activity, mineral development, off-road vehicle use, or any other surface disturbing activity could have serious impacts on this species. A monitoring plan was established in 1994 and should be monitored yearly to provide trend data. A habitat management plan which would prescribe protective actions is planned for this species.

Uinta Greenthread (*Thelesperma pubescens*)

Uinta greenthread is a Category 2 Candidate under review for Federal listing as Threatened or Endangered. The Nature Conservancy ranks this plant as G1S1, extremely vulnerable to extinction globally and extremely vulnerable to extirpation statewide.

Thelesperma pubescens is restricted to less than 100 square miles in southwestern Sweetwater and southeastern Uinta counties, Wyoming, and one location in Summit County, Utah. In the Resource Area, it occurs on BLM-managed public land off the north flank of the Uinta Mountains on Cedar, Sage Creek and Hickey Mountains. These mountains are isolated plateaus capped with cobbly, coarse soils formed from Bishop conglomerate. The Uinta greenthread grows along the rims of these mountaintops. All suitable potential habitat in the area of known populations has been surveyed for Uinta greenthread.

This species is generally abundant where it occurs; populations range in size from thousands to tens of thousands of individuals. Due to its overall restricted range, disturbance could significantly impact the species. A status survey was conducted for this species in 1988 by the Wyoming Natural Diversity Database (Marriott 1988a), primarily in response to active oil and gas field development in the area. Off-road vehicle use on the habitat (tire tracks) was identified as an actual threat to the species during the summer of 1993. A habitat management plan is planned for this species. The proposed Candidate plant ACEC will provide protective management designation for this species.

Cedar Rim Easter Daisy (*Townsendia microcephala*)

The Cedar Rim Easter daisy, is a Category 2 Candidate under review for listing as Threatened or Endangered. The Nature Conservancy ranks this plant as G1S1, extremely vulnerable to extinction globally and extremely vulnerable to extirpation statewide. This species was recently discovered and is found only in southwest Sweetwater County, Wyoming. It grows in nearly identical habitat to that of *Thelesperma pubescens*.

The population of the Cedar Rim Easter daisy grows on a rocky slope at the summit of Cedar Mountain within one mile of a population of *Thelesperma pubescens*. Very little is known about this species. However, the Wyoming Natural Diversity Database performed a status survey of this species in the summer of 1994. A monitoring program was established and it is recommended that monitoring be done yearly.

Due to the extreme rarity and apparently very small population size, surface disturbance could significantly impact this species to the point of extinction.

VEGETATION

Satellite imagery (LANDSAT) and computer enhancement techniques were used to provide a general land cover class map and associated acreage (Map E). The LANDSAT imagery, as interpreted by Resource Area specialists, distinguishes broad cover associations (Level III), generally discernible by percent ground cover and land form.

The following summaries are arranged by community type applicable to broad LANDSAT classification schemes. Site specific plans will describe impacted vegetation in more detail. Table 3-17 provides acreages for the LANDSAT classifications.

Low Density Sagebrush Class

This LANDSAT classification encompasses communities dominated by various shrubs with a canopy cover of less than 35 percent. The major components associated with this classification are the big sagebrush, low sagebrush, desert shrub, and grassland communities. These communities are found throughout the planning area on all slopes, aspects, substrates, and precipitation zones.

The communities that comprise the low density sagebrush classification are abundant and are important as a forage base for livestock throughout the planning area. Cattle utilize the grass and forb component extensively during the spring, summer, and fall, while sheep utilization takes place on the shrubs, grasses, and half shrubs during the spring, fall, and winter. These communities also supply important yearlong forage for antelope, and to a lesser extent, mule deer. Many nongame species utilize these communities throughout their life cycle. Sage grouse strut, nest, and raise young in them. Wild horses utilize these communities yearlong in most of the wild horse herd areas. Vegetation production estimates for this and all other classifications can be found in Appendix 11-1 and average stocking rates can be found in Appendix 11-2. Shallow soils and arid conditions limit the feasibility of manipulating the various communities of this classification to achieve greater vegetative production, diversity, or species change.

High Density Sagebrush Class

This LANDSAT class encompasses communities dominated by various shrubs or other high production vegetation with a canopy or ground cover of greater than 35 percent. The major components associated with this classification are the Wyoming big sagebrush-grass, mountain big sagebrush-grass, mountain shrub, meadows, and some open cover aspen stands. All of the communities represented by this classification are found on rolling to steep topography, on all aspects, and generally above 7,000 feet. Sites occupied by these communities generally receive 10 or more inches of available precipitation per year.

The communities that comprise the high density sagebrush classification are fairly abundant in the higher elevations and moisture regimes of the planning area. Cattle utilize the grass and forb component extensively throughout the late spring, summer, and early fall, while sheep utilize the shrubs and grasses while lambing and trailing to summer and winter range. These communities also supply important yearlong forage for mule deer and elk, and summer forage for pronghorn antelope. In several areas these communities are considered crucial deer winter range and elk calving areas. Many nongame species utilize these communities, and sage grouse can be found in large numbers during the summer months. Wild horses utilize these communities yearlong, but concentrations can generally

be found during the late spring, summer, and early fall. Vegetative production estimates for this classification can be found in Appendix 11-1 and average stocking rates can be found in Appendix 11-2.

Many of the communities associated with this classification have the potential, through manipulation, for increased herbaceous production, which would benefit livestock, or in certain instances, wildlife production. The most practical methods to remove sagebrush or diminish community dominance are to burn or chemically treat selected individual sites. The communities that comprise the high density sagebrush classification have favorable moisture, soils, understory components, and produce enough shrub cover to make treatment of this classification feasible. Prescribed burns will take place only in the 10 inch and above precipitation zones. Potential acreage for prescribed burning is 290,000 acres.

Prior to manipulation, sites are evaluated against objectives determined for management of the area and responses expected from associated vegetation. Many publications discuss the response of various range plants to fire and will not be reiterated here; a summary of responses is found in Appendix 11-3, Appendix 11-4, and Appendix 11-5 (Wright, et al. 1979). Appendix 9-2 contains a list of range improvement and vegetation guidelines.

Chemical sagebrush manipulation is often more expensive than burning, and is therefore often not a feasible alternative. Studies have indicated that the use of herbicides has a negative impact to the forb component of a sagebrush-grass community. Chemical sprays also often impact nontarget vegetation within communities if not timed correctly.

Saltbush Class

This LANDSAT class encompasses communities dominated by various shrubs and half shrubs that tolerate high salt content or exchangeable sodium. These communities are generally found in the 7- to 9-inch and lower ends of the 10- to 14-inch precipitation zones. The major components associated with this classification are the saltbush and half shrub communities. In the eastern half of the planning area, this classification could not be accurately determined from the LANDSAT images; therefore, existing vegetation inventory data was integrated into the image, allowing for a more accurate representation.

Plant cover in this classification is generally sparse due to climatic and edaphic factors; however, this classification provides important fall and winter forage for livestock and wildlife. Due to aridity and high salt content in the soils, attempts to manipulate these communities to produce more desirable or plentiful forage are not normally feasible. Before implementing management practices such as grazing systems and rehabilitation, a thorough analysis of the community structure and potential should be conducted. Vegetative production estimates for this classification can be found in Appendix 11-1 and average stocking rates can be found in Appendix 11-2.

Greasewood Class

This classification encompasses communities dominated by black greasewood (*Sarcobatus vermiculatus*) that are commonly found on flat, alluvial fans in canyons and flood plains adjacent to intermittent and perennial streams in the 7- to 9-inch and 10- to 14-inch precipitation zones or in association with stabilized sand dunes. The soils supporting this community are generally deep, poorly drained, and moderately to strongly alkaline. The associated understory vegetation is usually sparse due to the soil structure, arid conditions, and competition generated from the greasewood canopy.

The greasewood classification seldom represents pure stands of greasewood, but is more likely an intermingling of other classifications including low density sagebrush, saltbush, and in some cases riparian. In these instances, associated species will be similar to those described for the specific classification. Where classic greasewood communities occur along saline or alkaline drainage bottoms, associated species normally found are saltbush (*Atriplex gardneri*), tansy mustard (*Descurainia pinnata*), meadow barley (*Hordeum brachyantherum*), sandberg bluegrass (*Poa secunda*), and basin wildrye (*Elymus cinereus*).

This classification is fairly abundant in the arid canyons and sandy areas of the planning area, and provides forage and cover for all types of wildlife, classes of livestock, and wild horses. Vegetation manipulation opportunities in greasewood communities are often limited by edaphic and climatic conditions, and rehabilitation should be attempted only in severely depleted sites using methods that save as much native vegetation as possible. Vegetative production estimates for this classification can be found in Appendix 11-1 and average stocking rates can be found in Appendix 11-2.

Aspen Class

This LANDSAT classification encompasses communities dominated by aspen (*Populus tremuloides*). The major components associated with this classification are pure aspen communities and communities that have aspen intermingled with big sagebrush (*Artemisia tridentata*).

Aspen communities commonly occur as transitional vegetation between sagebrush and conifer zones, but can also be found on northern and eastern slopes where snowbanks accumulate and along the upper reaches of perennial streams in the 10- to 14- and 15- to 19-inch precipitation zones. The soils that support this community are generally deep, well drained, and contain a high level of surface and near surface organic matter.

Because it supplies abundant forage and cover, the aspen community is important to livestock and many species of wildlife, and recreationists are attracted to this community to camp, hunt, hike, and view wild flowers.

Aspen stands are generally seral communities, and if left undisturbed, eventually develop into a conifer association. Management to maintain aspen stands typically involves disruption of the overstory, by either logging or burning, to allow root sprouting. Overgrazing of root sprouts can cause stands to be even aged, which may eventually lead to stand die off and replacement by another vegetative community. Vegetative production estimates for this classification can be found in Appendix 11-1 and average stocking rates can be found in Appendix 11-2.

Riparian Class

This LANDSAT classification encompasses communities that have some level of riparian vegetation and available water. The major components associated with this classification are the meadow, willow, cottonwood, greasewood, and sagebrush communities. These communities can generally be found along the Big Sandy, Little Sandy, Sweetwater, Green, Black's Fork, and Henry's Fork river systems, along many small perennial and intermittent streams, and around hundreds of springs, seeps, sloughs, and reservoirs in all precipitation zones. The soils that support these communities are generally deep, rich loams high in organic matter, except in moist greasewood communities, where the subsoils may be moderately to strongly alkaline. In many instances, riparian areas are too small to be interpreted from the LANDSAT image, and are therefore included in bordering classifications.

Because of relationships to water and resultant high forage production, riparian communities are very important and are used for food, cover, and nesting habitat for a variety of domestic and wild animal species. The natural beauty and available water provide opportunity for a variety of recreational activities such as camping, fishing, hunting, waterskiing, swimming, and other related activities.

Because of the demands on and importance of riparian communities, management considerations have focused on protecting these areas from depletion of vegetation and associated wildlife species. Fencing and use of certain grazing systems have been effective tools to maintain and improve the quality and quantity of riparian ecosystems. Vegetative production estimates for this classification can be found in Appendix 11-1 and average stocking rates can be found in Appendix 11-2.

Conifer Class

This LANDSAT class encompasses communities that are dominated by conifer species. Conifer stands occur along the foothills of the Wind River range, and on Little Mountain, Pine Mountain, and Hickey Mountain. At lower elevations, conifer stands can be found on northern and eastern slopes where additional moisture from snow banks is available, and at higher elevations they occupy all aspects.

Timber types grouped under this classification include lodgepole pine (*Pinus contorta*), subalpine fir (*Abies lasiocarpa*), Douglas fir (*Pseudotsuga menziesii*), Englemann spruce (*Picea engelmanni*), blue spruce (*Picea pungens*), and limber pine (*Pinus flexilis*). Many different plant associations may occur under these timber types and are dependent on soils, aspect, moisture, and light availability. A complete description of forest habitat types and plant communities is discussed in *Forest Habitat Types of Eastern Idaho-Western Wyoming* (USDA 1983).

The communities that comprise this classification provide very little forage for livestock; however, wildlife use them for cover and limited browsing. Recreationists are attracted to conifer communities to camp, hunt, enjoy scenery, and view wild flowers. Vegetative production estimates for this classification can be found in Appendix 11-1 and average stocking rates can be found in Appendix 11-2.

Juniper Class

This LANDSAT classification encompasses communities dominated by Utah juniper (*Juniperus osteosperma*). This classification could not be accurately determined from the LANDSAT images; therefore, existing vegetation inventory data was integrated into the image, providing a more accurate representation. These communities are generally found at 5,400 to 8,000 feet on warm, dry foothills with shallow, sandy or rocky soils, near buttes, cliffs, or rock outcrops in the 7- to 9- and 10- to 14-inch precipitation zones. Utah Juniper communities are fairly abundant in the southern half of the planning area, where they frequently merge with big sagebrush (*Artemisia tridentata*) communities in deeper soil pockets. Juniper grows well on deeper soils, but periodic wildfire has restricted the older stands to rocky soils where the understory is usually insufficient to carry a wildfire. A small area of pinyon pine (*Pinus edulis*)/ juniper community exists along the southern edge of the planning area. Limber pine also occurs in juniper communities.

Three areas in the juniper vegetation type have been identified as unique for southwest Wyoming. These are: the Little Firehole Canyon cottonwood community, the Wildhorse Basin-Minnie's Gap pinyon-juniper community and the Richard's Gap pinyon-juniper community.

The Little Firehole Canyon south of Rock Springs is a scenic, undeveloped area of sandstone outcrops and canyons dominated by (Utah juniper)/*Artemisia tridentata* (big sagebrush) communities. Within this juniper woodland is a relic cottonwood canyon dominated by a *Populus angustifolia* (narrowleaf cottonwood)/*Rhus trilobata* (skunkbush sumac) community. This cottonwood stand represents a complex of Great Basin species at the northern edge of its range, which is essentially in pre-settlement condition. It is considered rare in the planning area, and in the state, by virtue of its good condition and unusual shrub understory.

The pinyon/juniper woodlands which occur at Richards Gap and Wildhorse Basin are representative of Great Basin floristic elements which are at their northernmost extension. They are two of the best examples of this woodland type in the state. These communities also contain Great Basin floristic elements at the northern edge of their range: *Pinus edulis* (pinyon pine), *Eriogonum corymbosum* (corymbose wild buckwheat), *Philadelphus microphyllus* (littleleaf mockorange), *Balsamorhiza hispidula* (balsamroot), and *Galium coloradoense* (Colorado bedstraw). In addition, Ephedra viridis (green Mormon tea), *Aster arenosus* (sunflower aster), and *Draba juniperina* (draba), a regional endemic from southwestern Wyoming, northeastern Utah, and northwestern Colorado, can be found at Wild Horse Basin-Minnie's Gap. These two sites are unique in Wyoming as they represent the only clustering of these taxa together in one place in Wyoming. Further north these taxa drop out; however, the Utah juniper element continues north until it reaches the Montana border.

The juniper communities provide valuable yearlong cover and forage for elk and mule deer as well as many nongame species. The *Urosarus ornatus hispidula* (northern tree lizard) is found in its northernmost habitat at Richards Gap. Six species of juniper-dependent passerine birds are known to use these juniper communities for perching, foraging, migration, nesting, escape or thermal cover, or other various stages of their life cycles (Fitton 1989). These species are *Myiarchus crinitus* (ash-throated flycatcher), *Aphelocoma coerulescens* (scrub jay), *Parus inornatus* (plain titmouse), *Psaltriparus minimus* (bushtit), *Vireo vincinior* (Gray vireo), and *Icterus parisorum* (Scott's oriole). Several of the species have specific requirements for "old-growth" juniper (and the associated understory) for nesting or foraging, and at least one, the scrub jay, is quite susceptible to disturbance by humans during nesting. They are all classified as Priority Species in Need of Special Management by the Wyoming Game and Fish Department.

Manipulation (burning and chaining) of juniper communities to produce or increase herbaceous vegetation is practiced in many areas of the country where heavy stands of juniper exist on deep soils in association with sufficient desirable vegetation. Due to the site potential, associated soils, and existing vegetation found in conjunction with most of the juniper stands in the planning area, manipulation is not generally economically or realistically feasible. Vegetative production estimates for this classification can be found in Appendix 11-1 and average stocking rates can be found in Appendix 11-2.

Barren Class

The barren classification contains lands with less than 10 percent ground and aerial vegetation coverage, including rock outcrops, badlands, slick spots, steep slopes, roads, developments, etc. Production levels are minimal, and in naturally occurring barren areas, there is very limited opportunity for improvement or revegetation. Artificial barren areas can and may be reclaimed/revegetated with native species after disturbance ceases. Use of barren areas by livestock and wildlife is minimal.

Sand Dune Class

Sand dune communities can be found in the east central portion of the planning area at elevations from 5,800 to 7,000 feet on upland positions with rolling or rough terrain and highly permeable, unstable, or shifting soils. Numerous intermittent or perennial ponds form at the bases of the rolling dunes. Aquatic vegetation may become associated with these ponds, but the primary vegetation is that associated with the dunes.

The dunes supply limited forage, but adequate cover and protection to livestock and wildlife. Elk frequent the area and nongame species are abundant. Recreationists use the area heavily for off-road vehicle driving. Vegetative production estimates for this classification can be found in Appendix 11-1 and average stocking rates can be found in Appendix 11-2.

Agriculture Class

This classification includes acreage that is cultivated, irrigated, or otherwise produces a crop or hay, although the Green River and Rock Springs golf courses can be found in this classification, as can most fenced private land.

Poisonous and Noxious Plants

Poisonous plants occur throughout the planning area, although cases of livestock deaths due to these plants are infrequent. Appendix 11-6 lists the major poisonous plants found in the planning area. Appendix 11-7 lists the noxious weeds found in the planning area.

VISUAL RESOURCES

Visual resources are best described using the physiographic provinces within the planning area. These physiographic provinces are large scale geographical units of land. Common characteristics (landform, water, color, etc.) unlike those in other provinces exist within each. Each province helps establish a logical frame of reference with which to classify the relative visual quality for each scenery quality rating unit. A detailed description of the 34 scenery quality units in the planning area is located in the Green River Resource Area Office.

The planning area lies mostly within the Wyoming Basin physiographic province; however, the Wind River Mountains are within the central Rocky Mountain province. The Wyoming Basin is located in the west-central portion of the state. It is bounded on the north by the Wind River Range and on the south by the Uinta Mountain Range. The province extends east into the Red Desert and west to the foothills of the Wyoming Range. The planning area includes a portion of the Red Desert.

The landscape found in the Wyoming Basin Province is characterized primarily by highly erodible soils and multi-colored, horizontally layered sedimentary bedrock. These conditions have generated the formation of the colorful badlands landscape common throughout most of the province. Between these badland areas, the land form is primarily low rolling or flat-topped hills. Dramatic elevation changes and steeper slopes become more dominant near the Wyoming and Wind River Mountain ranges.

The general lack of precipitation and localized occurrence of surface water resources provide for three major vegetative communities. Riparian zones are commonly found along all the perennial streams and rivers, as well as along several of the areas having intermittent surface water. Common species include willows, cottonwood, water birch, and currants, as well as various wet-mesic to hydric grasses, sedges, and forbs. The remainder of the vegetation is sparse and tends to be located on the well-drained soils of side slopes and hillsides in the province. Vegetative species commonly found in these areas include Wyoming sagebrush, rabbitbrush, currant, scattered patches of Douglas fir and aspen, various dry mesic to xeric grasses (such as sandberg bluegrass, Indian ricegrass, etc.), and forbs (e.g., buckwheat, pussy toes, phlox, etc.). Alkaline conditions occur in localized areas where evaporation rates exceed the volume of infiltrating surface water. This results in an accumulation of various minerals (e.g., sodium and calcium), leaving a white residual layer on the soil surface. Salt tolerant vegetative species that commonly inhabit these areas include greasewood, shadscale, saltbush, etc. (refer to Vegetation MSA).

Surface water in the Wyoming Basin Province is primarily restricted to the Green River and its tributaries. Other major surface water resources include Fontenelle, Flaming Gorge, and Big Sandy Reservoirs.

Cultural modifications within this physiographic province are primarily a function of activities associated with petroleum production. Oil and gas facilities, pipelines, roads, power distribution lines, etc., are all very common in the producing areas (western half) of the province. Ranching and other rural or small community developments, as well as cities and towns, compose the remainder of the province's cultural modifications.

Scenic quality is perhaps best described as the overall impression retained after driving through, walking through, or flying over an area of land. In the VRM process, rating Scenic Quality requires a brief description of the existing scenic values in a landscape. This step identifies (1) areas that must be protected, (2) opportunities for enhancement and rehabilitation, and (3) opportunities for improvement by reducing the contrast of cultural modifications.

Visual zones were developed for each traveled route with a high or medium use volume, to identify foreground, middle ground, and background areas. Where foreground-middle ground areas overlapped the background area of another travel route, the foreground-middle ground classification took precedence. The foreground-middle ground classification took precedence throughout the planning area.

From the sensitivity level determinations, four visual classes were identified: Class II - retention, changes should not be evident; Class III - deviation, changes may be evident but subordinate; Class IV - modification, changes are evident and somewhat dominant; and Rehabilitation Areas - the natural character of the landscape has been disturbed to a point where rehabilitation is needed to bring it up to one of the higher classifications (see Map 25 and Map 53).

Areas with important scenic and visual values include the Greater Sand Dunes ACEC, recreation sites, Wilderness Study Areas, South Pass Historic Area and the scenic vistas along Highway 28, White Mountain Petroglyphs, rivers, the Wind River Mountains, Red Creek, Currant Creek, Little Mountain, Pine Mountain, Steamboat Mountain, major reservoirs, historic trails, Continental Divide Snowmobile and hiking trails.

WATERSHED

The planning area is located in the upper reaches of the Colorado River Basin. There are approximately 1,600 miles of streams and approximately 46,000 acres of lakes, ponds, and reservoirs in the area. The major reservoirs in the area are: Eden Valley Reservoir, Sandy Reservoir, Fontenelle Reservoir, and Flaming Gorge. The major watersheds in the area are the Green River, which is part of the Colorado River Basin, and the Sweetwater River which is part of the

Missouri River Basin (Map 26). Annual discharge from these two basins is approximately 1,308,740-acre feet/year and 6,440-acre feet/year, respectively.

Stream flow in the area can be characterized as high magnitude-low frequency due to thunderstorms falling on soils that shed much of the rainfall. Other characteristics which influence high magnitude stream flow on a local basis are lack of vegetation (characteristic of saline uplands), and extensive areas of rock outcrops which allow for 100 percent runoff.

Stream channels in the planning area are types A and B (Rosgen 1985) at higher elevations, where there is plenty of cobble and bedrock to armor the channels. Type C channels are found in lower areas where sedimentary geology predominates. Channel stability varies from good to poor, with the majority of streams in the fair to poor category (USDA Channel Stability Evaluation).

Since the area is located in the upper reaches of the Colorado River Basin, salinity is a concern. Table 3-18 lists those streams with the highest levels of salinity in the area. These streams drain the Rock Springs Uplift. The data in Table 3-18 demonstrates that this area is capable of producing high salinity levels under natural conditions and much accelerated levels under disturbed conditions.

Monitoring

Since 1976, 27 streams have been sampled to develop baseline data. An effort has been made to reduce the baseline type sampling in favor of site specific monitoring for compliance and/or cause and effect. The intent of this monitoring is to ensure that the BLM complies with the Wyoming DEQ Water Quality Rules and Regulations, Chapter 1 (Wyoming 1990) and Quality Criterion for Water (EPA 1976). Currently, 12 streams are being gauged and sampled on the planning area for a variety of physical and chemical constituents. Jack Morrow and Pacific Creeks are the only streams which are currently being sampled for baseline information.

Groundwater

The planning area is underlain by Quaternary, Tertiary, and Cretaceous geological systems which provide groundwater. Although much has been documented about groundwater occurrence in the area, the aquifer systems are not well defined because of the sporadic nature of occurrence in each geologic layer.

Some geologic stratigraphic units which are known to contain groundwater are the Bishop Formation, Bridger Formation, Laney Shale, Wilkins Peak, and Tipton Shale members of the Green River Formation, the main body of the Wasatch Formation, and the Almond and Ericson Formations of the Mesaverde group. The TDS for each can be found in Table 3-19. The appropriate use for waters of these and other qualities can be found in Table 3-20.

Although little has been documented on groundwater recharge in the area, published information alludes to the fact that the following areas can be classified as recharge areas: the Rock Springs Uplift, Wind River Front, north flank of the Uinta Mountains, and localized areas recharging the Bishop Conglomerate (Pine Mountain, Little Mountain, and Cedar Mountain) (see Map 26).

Water Depletions

Cities and towns, trona mining, power plants, oil and gas and mineral development activities, and agriculture all utilize water from the Green and Sweetwater rivers and their tributaries. An exception to this is the town of Superior, which relies on water wells for its water.

Roads and Surface Disturbance

Roads can be responsible for up to 90 percent of sedimentation (Satterlund 1972). The planning area is no exception to this rule since many roads, particularly those south of I-80, are poorly drained and are bladed to the width of four lanes. The combination of these two practices allows water, sediment, and associated salt to move down drainage ditches and into intermittent or perennial channels thus causing augmented flows and associated erosion and channel incision.

Other closely related problems are powerline roads, some pipelines and old seismic lines which are not water barred or revegetated, and poorly placed or designed well pads. These surface disturbances can create channels down which water moves forming gullies, thus eventually transporting salt and sediment into local drainages. In some instances, pipelines and roads have been located in the inner gorge area of intermittent and ephemeral drainages, increasing sedimentation and gullying. Areas where roads are a particular concern include Sage Creek; the area west of Flaming Gorge (east of Sage Creek Mountain, north of the Henrys Fork River); the Red Creek Watershed; east of LaBarge, including the west side of the Little Colorado Desert next to the Green River; and developed oil and gas fields like Table Rock.

Irrigation return flows have been recognized in the last couple of years to have drastic effects on the condition of stream channels and fisheries. Such actions augment flows to small drainages, which reworks channels by incision. Presently Sculpin Creek, Canyon Creek, Antelope Wash, Long Draw, and parts of the Larson and Prospect Mountain Allotments have been affected by irrigation practices.

Riparian

Many riparian zones in the planning area have been overutilized by grazing animals. Overuse of vegetation causes destabilization of streams, allowing for channel degradation. Degraded riparian areas are nonpoint source contributors of sediment, salinity, and phosphate to the Colorado River system. Phosphate is partially responsible for eutrophication in the Flaming Gorge Reservoir. Eutrophication reduces available oxygen, thus impacting fish populations in the Flaming Gorge Reservoir. Reductions in phosphate contributions would benefit the fishery resource in the Flaming Gorge Reservoir.

WILD HORSES

The forefathers of wild horses in the planning area most likely first appeared with the Native Americans who traveled through or inhabited southwest Wyoming. White settlers first appeared in the mid-1800s, and horses often escaped or were turned loose on the open range. Many local ranchers would manage these herds for their own use. They introduced studs to improve the stock, and would gather the horses every year or two for their own use. During World War I, some local ranchers had contracts with the U.S. Army to supply horses for military use, and were given remount studs by the Army, to be turned loose with the herds to improve bloodlines. After World War I, with the advent of trucks and mechanized farm equipment, more horses were released and the herds continued to increase. During World War II, the ranchers lost many of their ranch hands and the horses were left to go wild. After a generation of not being gathered, the horses were very difficult to capture. In the late

1940s and early 1950s, as market prices increased, ranchers and others used airplanes to gather horses.

The types of horses in the planning area are as varied as their background. There are a few large draft horses, many horses reflect Quarterhorse mixture, and some show American Saddle Horse blood, a direct reflection of the main types of studs turned out by ranchers.

In 1959, Public Law 86-234 restricted but did not completely eliminate gathering of horses in the area. Ranchers who had legitimate claim to the horses could obtain permits from the State Livestock Board to gather claimed or stray livestock. With the passage of Public Law 92-195 in 1971, all gathering operations were stopped, except those conducted by the BLM, and the BLM assumed management control of the horses. In 1972, wild horse inventories began in the area. Horse population counts, primarily conducted in the month of February, represent the majority of monitoring conducted for horse location and population (Table 3-21). These figures have been arranged by current wild horse management area. The table also contains numbers of horses outside of current management areas. The counts do not contain the estimated 20 percent annual increase due to reproduction in that inventory year.

In 1979, an agreement with the Rock Springs Grazing Association, the International Society for the Protection of Mustangs and Burros, and Wild Horses Yes established a total population of 1,600 wild horses for the Rock Springs District. This agreement covered all wild horse areas within the Green River Resource Area as well as the Desert Common Wild Horse Area in the Pinedale Resource Area. A population of 1,450 wild horses was judged to be the optimal management level for monitoring purposes. In 1982, the Bureau accepted this management level for horses through an update of the land use plans for the Big Sandy and Salt Wells Resource Areas. The herd numbers for each wild horse management area were designated with regard to the agreement, as well as the size and terrain of the herd area.

A March 13, 1981, Order from the District Court of Wyoming (Mountain States Legal Foundation and Rock Springs Grazing Association vs. Cecil Andrus, 275K) required BLM to "remove all wild horses from the checkerboard grazing lands in the Rock Springs District except that number which the Rock Springs Grazing Association (RSGA) voluntarily agrees to leave in said area" in three herd management areas. The RSGA is a major private landowner in the area. The BLM reviewed the numbers recommended by the RSGA and, through the planning process, based appropriate management levels (AMLs) in the three herd management areas on those numbers. The AMLs reflect the results of an agreement with RSGA.

At present, the planning area contains four wild horse management areas and one interim wild horse management area (Map 28). Each area has an implemented management plan with objectives for wild horse management that is interwoven with the appropriate allotment management plans. These plans provide protection, management, and control of the wild horses. The four wild horse management areas are the Divide Basin Wild Horse Herd Management Area (WHHMA), the White Mountain WHHMA, the Salt Wells Creek WHHMA, and the Adobe Town WHHMA.

The Great Divide Basin management area is located 40 miles east of Rock Springs in the eastern portion of the planning area north of Interstate 80. It encompasses an area from the Rawlins-Rock Springs District boundary west to the Continental Divide. The management level range is 415 to 600 wild horses. The area consists of a total of 778,915 acres of which 73 percent is public, 2 percent is state, and 25 percent is private.

The White Mountain area encompasses an area from Interstate 80 north to the Big Sandy River and from Highway 191 west to the Green River. The management level range is 205 to 300 wild horses. The herd management area consists of a total of 392,649 acres of which 61 percent is public, 1 percent is state, and 38 percent is private.

The Salt Wells Creek area encompasses an area from Highway 191 south of Rock Springs east to the Rock Springs-Rawlins District boundary and south to the Wyoming-Colorado state line. The herd management range is 251 to 365 wild horses. The herd management area consists of a total of 1,193,283 acres of which 61 percent is public, 3 percent is state, and 36 percent is private.

The Adobe Town WHHMA is predominantly in the Rawlins District and is situated approximately 70 miles southeast of Rock Springs. The total herd management level for the wild horses is 500 head, with a range of 165 to 235 in the planning area. The herd management area consists of a total of 320,000 acres of which 93 percent is public, 2 percent is state, and 5 percent is private. Of the 320,000 acres, 94,000 acres lie within the planning area.

Each wild horse management area has an implemented management plan which describes the area, resources, horse population, and management objectives for the herd. These plans are on file at the Green River Resource Area office.

The latest wild horse inventory in the planning area was conducted in February 1994 and indicated a population of 1,839 horses. Of these, 1,651 were within established herd management area boundaries and 75 were outside the herd management areas. It is expected that the population will be 2,076 by the summer of 1994 if a 20 percent foal crop is realized.

Monitoring has been carried out in each WHHMA. The majority of monitoring has been conducted at the allotment level, with emphasis on vegetative conditions. Limited data has been gathered on the horses themselves, but a more extensive monitoring program will be developed for herd condition and objectives established in each herd plan. A summary of current herd area conditions based on analysis of monitoring information is contained in Appendix 9-5.

The South Desert-Figure Four Interim WHHMA (Map 28) encompasses the entire Figure Four Allotment, which is located in the extreme northwest corner of the Green River Resource Area, approximately 70 miles from Rock Springs; and the South Desert Pasture of the Desert Common Allotment in the Pinedale Resource Area. The herd management level for this herd area was 100 head (75 head in the Figure Four Allotment). In 1988, the Interim Wild Horse Herd Management Area was eliminated as a result of a decision in the Pinedale RMP and an EA covering the Figure Four portion of the herd area. Monitoring data collected over the years detected that the horses no longer occupied the area. The decision to eliminate the herd management area (and to remove all wild horses from the area) was re-evaluated. The re-evaluation determined that a larger area was needed to support a viable and manageable herd. There were 117,534 acres in this herd area, of which 98 percent were public, 1 percent were private, and 1 percent were state.

In July 1989, horse gathering operations were suspended in the State of Wyoming in reaction to an IBLA decision concerning the State of Nevada and an interest group for horses. This group appealed the basic herd numbers established in the herd management areas within Nevada. The decision to halt gathering operations in Wyoming was based on requests by the same interest group to evaluate herd management numbers in Wyoming. The Green River Resource Area completed two environmental assessments for numbers inside and outside of the management areas. In March 1990, the decision was made to resume gathering operations on areas outside wild horse areas. As of July 1990, the Interior Board of Land Appeals placed part of the decisions from the EAs for gathering operations in full force and effect.

WILDERNESS

There are 12 wilderness study areas (WSA) within the planning area: Buffalo Hump, Sand Dunes, Alkali Draw, South Pinnacles, Alkali Basin-East Sand Dunes, Red Lake, Honeycomb Buttes, Oregon Buttes, White Horse Creek, Devil's Playground-Twin Buttes, and Red Creek Badlands. The Adobe Town WSA is partially within the planning area. No other potential wilderness areas have been identified for evaluation in this document.

The wilderness study areas in the planning area (Map 4) were evaluated in two previous wilderness environmental impact statements (USDI 1990a and USDI 1987a). As a result of these analyses, the BLM recommended all of the Oregon Buttes (5,700 acres) and Devils Playground-Twin Buttes (23,841 acres) WSAs as suitable for designation. In addition, 6,080 acres of the 10,300-acre Buffalo Hump WSA; 21,304 acres of the 27,109-acre Sand Dunes WSA; 37,287 acres of the 41,404-acre Honeycomb Buttes WSA; and 4,480 acres of the Adobe Town WSA were recommended as suitable for designation.

The following WSAs were not recommended as suitable for designation: Alkali Draw (16,990 acres), South Pinnacles (10,800 acres), Alkali Basin-East Sand Dunes (12,800 acres), Red Lake (9,515 acres), Whitehorse Creek (4,002 acres), Red Creek Badlands (8,020 acres), part of the Buffalo Hump WSA (4,220 acres), part of the Sand Dunes WSA (5,805 acres), and part of the Honeycomb Buttes WSA (4,117 acres) (Table 3-22). All recommendations are pending Congressional decision.

Until Congress acts, these WSAs will be managed under the "Interim Management Policy and Guidelines for Lands Under Wilderness Review" (USDI 1987).

Should Congress designate any of the WSAs (partially or wholly) as wilderness, the management of the designated areas will be for wilderness values in conformance with the Wilderness Act and as described in designation legislation. Wilderness management plans would be prepared for WSAs designated by Congress as wilderness.

Should Congress not designate any area (partially or wholly) as wilderness, the management of the nondesignated areas will be in accordance with the approved Green River RMP. The nondesignated areas will lose their identity as WSAs and will be managed along with the adjoining area as prescribed in the approved Green River RMP.

WILDLIFE

Over 350 species of wildlife are found on a variety of habitats on the public lands in the planning area. Other resource activities such as realty, mining, recreation, and grazing, affect wildlife habitat beneficially or adversely. The Bureau of Land Management maintains habitat management responsibilities on public lands while the Wyoming Game and Fish Department (WGFD) manages wildlife populations.

Wintering populations of big game in the area include an estimated 170 moose; 1,800 elk; 12,600 mule deer; 45 white-tailed deer; and 51,000 pronghorn antelope. Over 55 percent of the planning area has been identified as crucial big game habitat. Included in this crucial habitat are fawning and calving areas and winter ranges. Some crucial yearlong habitat has been identified for the unique "Steamboat Mountain-Sand Dunes elk herd."

The WGFD manages big game on a "herd unit" concept. Herd unit boundaries do not generally match BLM resource area boundaries, making analysis and correlation of resource data and big game population data difficult. The WGFD revises its strategic population numbers for each big game species based on new habitat information, population trends, and recreation demand. The planning area is broken into several complete habitat units under criteria established in 1975, which provided boundaries for wildlife habitat areas.

Terrestrial Wildlife

Deer

Mule deer are distributed over most of the planning area, in 7 herd units which occur fully or partially within the planning area (Map 70). Table 3-23 shows population and harvest data by herd unit.

Economic analyses in this document are based only on the portion of the herd units within the planning area. Current population figures are derived from computer population models which may or may not have good statistical confidence depending on the quality and quantity of data fed into the program.

Some whitetail deer activity has been recorded along the Green River and near Willow Creek in the Wind River Mountains, but meaningful population estimates are not available.

In winter, mule deer move into good cover and ample browse at the Seedskadee National Wildlife Refuge and the Green River Breaks near LaBarge. During late fall, deer move from Bridger National Forest into lower elevations near Prospect Mountain. They winter along major drainages and ridges north of Highway 28 until April when they again move back toward the mountains. Some herds move south into Jack Morrow Creek and the area between Essex Mountain and Tule Butte. Pine, Cedar, and Long canyons offer good winter and spring habitat for several hundred deer, with many remaining there yearlong.

Cooper Ridge, Beans Spring, Red Creek Basin, South Baxter Basin, and sagebrush flats along Flaming Gorge are important winter ranges for the South Rock Springs Unit herds. Preliminary data from a recent deer study suggests that Cooper Ridge is a primary winter range for a portion of the South Rock Springs herd unit.

Shrubs furnish nearly 75 percent of the winter diet of deer. The primary winter food species for mule deer in southwest Wyoming are sagebrush, mountain mahogany, rabbitbrush, and bitterbrush. Shrubs taller than the average winter snow depth are important for deer survival. Winter range is a limiting factor for deer populations over much of their habitat, as shrubs are covered by snow in many areas.

Most deer activity within the planning area is dependent on the availability of water. Studies have shown that in arid regions, in the driest months, deer seldom move more than 1 to 1.5 miles from water. Deer require 1.0 to 1.5 quarts of water per hundred pounds of body weight per day in the winter and 2 to 3 quarts in the summer. BLM water wells provide water for livestock in the fall, but no water is provided for wildlife during dry summer months.

Some flowing streams and standing waters dry up during long, hot summers. This concentrates deer activity around those available waters that remain. In an attempt to relieve the pressure on overused water resources and to more evenly distribute deer in unused areas, the Bureau and the Wyoming Game and Fish Department have installed 23 wildlife guzzlers throughout the planning area.

Pronghorn Antelope

Suitable summer antelope habitat is found in most vegetative communities and includes about 4,662,000 acres within the Green River planning area. Six designated antelope herd units are either completely or partly within the planning area (Map 71): Bitter Creek, South Rock Springs, Uinta-Cedar Mountain, West Green River, Sublette, and Red Desert.

The 1988-89 post-harvest wintering antelope population in Wyoming was estimated at 363,150. Nearly 66,000 animals (about 18 percent of the Wyoming pronghorn population) occupy the planning area during various seasons of the year (Table 3-23).

An increase in the strategic population objective for the Sublette antelope herd from 19,400 to 30,000 is not an increase in actual antelope numbers for this herd. New information gathered by the Wyoming Game and Fish Department indicates that the Sublette antelope herd population historically was approximately 50,000 to 60,000 animals instead of the 32,000 listed in the Draft RMP EIS. At this time, the Sublette antelope herd is below population objective, numbering approximately 27,000.

Preferred pronghorn habitat is usually characterized by the presence of summer water and sagebrush in combination with rabbitbrush and antelope bitterbrush. The planning area provides an estimated 3,880,000 acres of this habitat (this includes all lands administered by private landowners and other federal agencies) (see Map E). Big sagebrush is the most common species. Antelope generally do not inhabit areas where sagebrush exceeds 2 to 3 feet in height.

Wyoming big sagebrush dominates the antelope winter ranges in southwest Wyoming. Black sagebrush is found on many ridges and sideslopes, and is a highly desirable forage species for both pronghorn and sage grouse. Small acreages of silver sage (usually found in higher precipitation zones) exist in the Figure Four Canyon area, Prospect Mountains, and the Wind River foothills. Saltbush communities are critically important as winter habitat, although pronghorn use them yearlong. Many saltbush communities are in association with greasewood, spiny hopsage, or shadscale. These plants apparently provide basic carbohydrates, protein, and other nutrients for growth and body maintenance of pronghorn. Over 2 million acres of saltbush/hopsage habitat exists in the planning area (see Map E).

Probably the single most important factor affecting antelope populations is weather. Severe winters with deep, crusted snow and below zero temperatures cause high antelope mortalities. An example of weather-induced population dynamics is the drastic reduction of antelope numbers in the planning area due to severe winter storms in the early 1970s. Mortality losses by herd unit in 1971-72 were: Red Desert-55 percent, Sublette-74 percent, West Green River-46 percent, and South Rock Springs-47 percent.

The water requirements of antelope are met through foraging on succulent plants, consumption of snow, and natural surface water. The availability and distribution of water is probably the most important limiting factor affecting summer antelope distribution.

Lack of surface water in some areas influences migration of pronghorn and their season of use on particular ranges. In many areas, pronghorn rely on plant succulence, rains, some perennial seeps, and human-made water developments to make summer use of otherwise unsuitable habitat. Mild winters during 1987, 1988, 1989, and 1990 have reduced winter mortality; however, drought conditions have caused significant losses of fawns in some areas. Water developments have helped to improve antelope distribution in some local situations, but timely rainfall and availability of natural water are more significant in maintaining a sustained yield of wildlife. Disease and predation have not been documented as significantly affecting local big game populations.

Over 1,600 miles of fences affect pronghorn movement in the planning area. Of these, about half are on public land for the purpose of controlling livestock. About 475 miles are highway right-of-way fences, of which 230 miles are woven wire. Woven wire fences form a barrier to antelope movement. About 43 miles of fence have been identified as causing wildlife conflicts. Fence modifications such as antelope passes and lay-down panels, when well maintained, have helped pronghorn cope with some fences.

In 1975, the Wyoming Highway Department began a fencing program on southwest Wyoming highways which continues today. Dimensions, design, and placement of these and other new fences are causing some migration problems and inflicting some direct and indirect mortality on big game animals, especially the young. The placement of either wooden or wire stays between posts creates a very tight fence and prevents wildlife from migrating through fences they cannot jump.

Migration patterns vary considerably from year to year and relate to specific winter ranges, winter severity, snow depth, and migration barriers. The Little Colorado area supports a large resident herd as well as a large number of winter migrant pronghorn. The migrant herd summers from Farson to the Wind River Mountain foothills to Jackson. Season change in late September and October moves the animals southward to near Farson and as far south as Rock Springs. Winter range for pronghorn from the Oregon Buttes area is also near Farson and Eden. As fall approaches, these animals move southwest and congregate with other migrant herds in low lying areas east and south of Farson. During spring, pronghorn are seen grazing crested wheatgrass along reclaimed rights-of-way near Farson as they migrate northeasterly toward spring and summer ranges. Migratory patterns of pronghorn north of Black Rock are uncertain, although their yearlong residence there is noteworthy. Additional discussion on seasonal ranges, migration patterns, conflicts, and historical observations are available in the Resource Area Office.

Rocky Mountain Elk

Four elk herd units are designated in the planning area. The South Rock Springs Herd unit and the Steamboat unit are completely within the planning area, while only portions of the Uinta-Cedar Mountain and South Wind River units are within the planning area (Map 72). Table 3-23 shows herd unit management objectives.

The Steamboat and Little Mountain elk herds were established after several transplants from the Jackson Hole area. Some of the Steamboat elk migrate south to North and South Table Mountain and winter from Hatcher Mesa to Long Canyon and Pine Canyon. This migration has not been observed since about 1985, probably because of mild winters and minimal snow. Small resident elk herds are now found along Alkali Creek, Natural Corrals, Ten Mile Draw, and other areas. In the winter of 1975-76, nearly 300 elk were observed on the Red Desert near "the pinnacles" and headwaters of Alkali Creek.

The Little Mountain and Pine Mountain elk population has been steadily increasing. This population peaked in 1972-73 and has declined since but is still at a level above objective. Disease and predation effects on local elk are not known but appear to be minimal.

Some amount of elk use occurs during severe winters in areas adjacent to the Green River near Bird and Chapel canyons. These animals come from the Bridger National Forest near Big Piney. A few elk summer here where they water on the Green River. Numerous resource activities conflict with wildlife winter range in this area. The primary cause of habitat loss is oil and gas development.

Elk populations west of Flaming Gorge were relatively stable from 1966 through 1978. Since then, the herd has gradually increased. Populations were over objective in both 1988 and 1989. These animals do not seem to be as seriously affected by weather conditions as other elk herds in the planning area.

Elk forage on a wide variety of trees and shrubs, grasses, and herbaceous plants. Fecal studies conducted from 1974 through 1978 show that 74 percent of the diet was grass, 3.5 percent of the diet was

forbs, and 22.5 percent consisted of shrubs. More than half of the browse was antelope bitterbrush.

Moose

The moose population is static to slightly increasing as a result of vigorous law enforcement and mild winters. Some calving occurs on tributaries of the Sweetwater River, the upper Big Sandy River, and along the Green River above the Green River Golf Course. Moose calving also occurs in aspen stands and along drainages in the upper Henry's Fork River, both on and off national forest lands (Map 73).

During early winter, moose migrate from the forests into Blucher Creek, Lander Creek, the lower Sweetwater River, and the Henry's Fork. They are yearlong residents along the entire Green River system to below the County Recreation area. Yearlong residence is common in the Sweetwater and both Big and Little Sandy River watersheds (Table 3-23). Good yearlong riparian habitat exists from Fontenelle to Big Island, with preferred habitat on Seedskadee Refuge. During the winters from 1976 through 1985, moose were observed using the lower Big Sandy River, from Big Sandy Reservoir upstream.

Moose may also be seen along the Blacks Fork, in very low quality habitat south of Blue Point. Population densities between Granger and Green River are very low with occurrence classed as low common to uncommon. A few moose also inhabit small riparian areas on Pine and Little Mountains.

Parts of the upper Sweetwater, the Henry's Fork, and other areas indicate declining moose habitat quality resulting from heavy livestock grazing of woody plants and a decrease in beaver activity. Habitat problems include changes in browse composition, lack of vegetative undergrowth, and siltation of beaver ponds and stream pool eddies.

Bighorn Sheep

Bighorn sheep historically ranged across the planning area as indicated in early accounts by mountain men and settlers. Petroglyph panels at the Sugarloaf, White Mountain, and Cedar Canyon rock art sites, and elsewhere depict bighorn sheep as important to prehistoric inhabitants of the region and they were probably common here at that time.

Habitat requirements of bighorn sheep are similar to other wildlife species occupying the planning area. They prefer broken terrain with few human intrusions and little human activity. Bighorns graze on a wide variety of grasses, sedges, and forbs. Browse species are important foods during fall and winter. In desert or arid regions, where lack of moisture limits grass growth, shrubs and trees are major food items. Bighorns are attracted to and seek out mineral and salt licks during spring and early summer. The species is not well adapted to deep and crusted snow and are forced to winter on the confines of southern exposures or wind-blown slopes near escape terrain. Distribution depends upon available water supplies, predators, and human disturbance. Suitable bighorn sheep habitat occurs on Little Mountain, Richards Mountain, Pine Mountain, and the Haystacks. No bighorns presently inhabit the resource area, although populations in Utah may soon expand over the state line.

Mountain Lion

The distribution and abundance of mountain lions in the planning area is largely unknown. Information is based upon sketchy reports by the public, BLM biologists, and WGFD information. Indications are that distribution is widespread and the population is very limited. There is one hunt area for mountain lions that includes the entire state. Available data represent the statewide hunt and hunter success for mountain lions from 1974 through 1984.

The wide distribution of mountain lion kills and observations over the past several years indicates that this species is presently found throughout much of the planning area within suitable habitat. There have been sightings of mountain lions in the planning area in past years and both legal and illegal harvests of big cats occurs.

Mountain lion still reside in the broken juniper and rimrock areas south of Wilkins Peak to the Utah border and in the Haystacks. Cats have been observed on Cooper Ridge, in Adobe Town, on Steamboat Mountain, Little Mountain, and in the Wind River foothills. The main habitat component restricting mountain lion populations in the planning area is the absence of large, undisturbed, remote wild areas. Most of the planning area is easily accessible; human presence and activities throughout the lion's habitat will probably continue to limit mountain lion populations.

Black Bear

Suitable bear habitat exists over about 189 square miles of land in the planning area. Black bear occupy timbered habitats along the Wind River Mountains and near the Colorado border. The BLM has found evidence of bear activity on Little and Pine Mountains. Observations indicate that black bears are somewhat uncommon but do frequent BLM campgrounds. In 1977, litter barrels were removed and bear activity in these areas ceased. Occasionally, black bears are seen or tracks noted along the Sweetwater River and its tributaries and upper reaches of Little and Big Sandy Creeks. Most of the legally harvested bear are taken in the Bridger National Forest. Sport hunting removes a few bear each year but appears to have little effect on population. Urbanization of mountain foothills, off-road vehicle use, and animal damage control activities have nearly eliminated this large predator from public lands.

Coyote

The coyote is cosmopolitan throughout the west and Wyoming. Populations fluctuate annually, depending on hunting pressure, fur prices, and available prey. This is an almost entirely carnivorous animal relying on jackrabbits, cottontail rabbits, ground squirrels, mice, other rodents, insects, and other small animals for 98 percent of its diet. The coyote is an opportunist in hunting for a meal. The coyote will also take sheep if available. Coyote litters increase as population of coyotes decrease, or rodent and rabbit populations increase.

Other small mammals that may be present in the planning area include jackrabbit, porcupine, raccoon, fox, skunk, and weasel.

Birds

Waterfowl

The planning area lies within the Pacific Flyway. The period of occupancy by waterfowl is comparatively short, and most of the waterfowl found here are migratory, short-term occupants. Most waterfowl nesting in the Pacific Flyway occurs below 8,500 feet.

Throughout the planning area, the availability of forage, food, and cover are the most significant factors affecting resident waterfowl populations. Nesting habitat is dependent upon cover in riparian areas. These areas are often dependent on beaver pond-building activities.

Every available open water in the planning area, from flowing wells and stock ponds to playa lakes and potholes, is used by waterfowl. Shovelers, gadwalls, mallards, pintails, and teal are the most common summer resident species.

Some species only migrate through the area on their way to breeding or nesting grounds farther north or to winter areas farther south. Other species such as the Barrow's goldeneye, are resident for only parts of the year, wintering in western Wyoming. All waterfowl are dependent on ponds, marshes, streams, lakes, and rivers.

Geese follow the same migration pattern as ducks with the exception of spring migration and breeding periods. They migrate into the area by early March and begin establishing nesting territories. Mating occurs by mid to late April. At this time of year, geese are common along the Green River, Blacks Fork, and Big Sandy and are not usually found staging on Flaming Gorge or Fontenelle Reservoir. As fall arrives and still waters become ice covered, geese congregate on Eden Reservoir, Fontenelle Reservoir, and the Green River. They remain here, feeding on submergent vegetation or Eden Valley grainfields until ice covers open waters. They then move southward into Colorado and Utah to spend the remainder of the winter.

Waterfowl nesting in freshwater lakes of the sand dunes has become nearly nonexistent within the past 10 years. The Red Desert region has historically had fair to good duck production as a product of human-made reservoirs and flowing wells. However, available water and adjacent cover necessary for nesting and escape have been reduced.

Beaver dams and muskrat activity complement waterfowl nesting and brood production. Information on suitable waterfowl habitat and distribution of waters is on file in the Resource Area Office.

Great Blue Herons, which nest atop cottonwood trees on the Green River and Henry's Fork, may be found along the Sandy, the Green River, and Antelope Spring Creek. Sandhill cranes are often seen courting and nesting along the Sweetwater River, Ord Creek, Seedskadee Refuge, and the Big Sandy River during spring.

Nonconsumptive uses of waterfowl in the planning area include scientific wildlife study, photography, and viewing by public land visitors.

Avian and terrestrial predators take some waterfowl and their young but their impact on the population is of no great importance. Probably the greatest limiting factor presently facing resident and migrant waterfowl is direct loss of birds in open industrial wastewater ponds, and loss of nesting riparian vegetation along streams and wetlands. Present waterfowl production in the planning area may not equal losses resulting from industrial waste waters. The Migratory Bird Treaty Act (1916) and the Migratory Bird Conservation Act (1929) and later Acts and amendments provide for migratory bird protection. Little had been done until recently in Wyoming to prevent unnecessary losses, outside of hunting regulation. Within the past year, many local operations have complied with the provisions of the Treaties by either removing and reclaiming open waste pits and ponds, or netting the open wastewaters with protective propylene nets.

Sage Grouse

Long-term trends from sage grouse harvest questionnaires and lek surveys show a gradual population decline. Local populations increased as a result of better habitat and forage conditions created by heavier than normal precipitation from 1980 through 1986. The drought conditions from 1987 through 1994 probably resulted in an increase chick mortality. This pattern of gradual population increases and sometimes drastic decreases (as indicated by chick survival and young per hen, production trend counts) is typical of sage grouse and other upland birds.

Wherever sagebrush grows, sage grouse can be expected if adequate water (streams, reservoirs, other water developments, guzzlers, etc.) is available. The reproductive characteristics and habits of sage grouse significantly limit their adaptability to human disturbance and habitat alteration. A cycle begins with birds returning to historic "strutting grounds" or breeding complexes in March. Strutting grounds, sometimes referred to as "leks," may be located at a point intermediate between the winter range and summer range, or in some cases the summer and winter range may be the same area. The grounds are usually small, open areas from 1/10 to 10 acres in size, but may be as large as 100 acres or more. Snow conditions play a part in the suitability of an area for strutting, as does the amount of vegetation. The strutting ground is an area supporting low, sparse sagebrush or an area denuded of vegetation.

Strutting ground counts have been conducted by the WGFD for many years. In 1968, there were approximately 133 active strutting grounds located within and adjacent to the planning area. By 1992, less than 92 sage grouse leks were found to be active (WGFD 1994). Population estimates for sage grouse are currently unavailable, but these birds were considered abundant in their preferred habitat statewide in the mid-1980s (Map 17). Brooding habitat is also an important aspect of sage grouse habitat selection. Broods need appropriate food in addition to cover.

Peak breeding season is early to mid-April when up to 200 birds may congregate on a single strutting ground. Birds are active in courtship displays during early morning darkness until sunrise. On overcast or foggy days, strutting grounds may remain active until mid-morning. Strutting can take place all night during full moon periods. An estimated 15 to 20 percent of the actual strutting grounds have been identified.

Historic and long-term information on sage grouse nesting indicates that 80-85 percent of nesting occurs within a 2-mile radius of strutting grounds. Recent radiotelemetry data gathered by Rocky Mountain Energy biologists show that some grouse move up to 11 miles to nest, while most range in the mile to four mile distance.

Chukar partridge, blue grouse, and ruffed grouse are also present in the planning area. Detailed habitat descriptions are on file in the Resource Area Office.

Raptors

There are 27 species of hawks, eagles, and owls either nesting, thought to nest, or having the potential of nesting in the planning area. Other species are either wintering populations, migrants, or possible migrants. The bald eagle and the peregrine falcon are federally classified as endangered species and require biological assessments of activities which may jeopardize or destroy them or their critical habitats. The BLM has identified the bald eagle, peregrine falcon, ferruginous hawk, prairie falcon, osprey, and golden eagle, as raptors of high priority and has effected conservation and habitat criteria for management. The burrowing owl is state listed as a species in the "rare" abundance category with a biological status designation of "I," indicating declining populations and/or habitat conditions or indicators of such throughout all or a part of their range.

Approximately 70 percent of the planning area has been surveyed for nesting raptors. About 40 percent of the planning area was surveyed for "special habitat features" in 1979 with most potential cliff-nesting habitat identified. A 1980-1981 raptor inventory was conducted within the Rock Springs Known Recoverable Coal Re-

source Area by BLM biologists and survey crews to satisfy coal leasing suitability criterion. Raptor inventories have not been completed on all potential habitats in the planning area. Raptor studies are currently driven by specific development projects and data are collected to determine raptor management conflicts (Map 18).

Many of the more than 1,600 known raptor nests occur on hilltops, low cliffs, and rock escarpments found within the sagebrush steppe community. Maintenance and management of this habitat component is of primary importance.

Raptor species that are commonly seen in the planning area include prairie falcon, American kestrel, ferruginous hawk, red-tailed hawk, Swainson's hawk, northern harrier, raven, golden eagle, and great-horned owl.

Prairie falcons nest on cliffs, ranging from low rock outcroppings to tall vertical cliffs (e.g., Rock Springs Uplift, Steamboat Mountain). Prairie falcon feed on cottontail rabbits, prairie dogs, horned larks, snakes, and ground squirrels.

American kestrels nest in varied environments such as dead snags, clay streambanks, and rimrock. Their diet includes insects, small birds, and small mammals.

Swainson's hawks nest on dry plains, open foothills, open forest, sparse trees, and riverbottoms (e.g., the Green River, Little Sandy River, and wood lots). Their diet includes rabbits, other small mammals, grasshoppers, and birds.

The ferruginous hawks nest on low cliffs, buttes, trees, on the ground, and artificial nesting platforms. Their diet consists primarily of rodents.

The red-tailed hawk prefers riparian zones and timbered areas for nesting. Their diet includes cottontails, jackrabbits, rodents, reptiles, and birds.

The northern harrier (or marsh hawk) commonly nests on the ground, often in dense vegetation. Their diet consists primarily of rodents, amphibians, reptiles, and other birds.

Golden eagles nest on cliffs, ledges, and pinnacles that provide a view of the area. Their diet includes rabbits, rodents, and carrion.

Great-horned owls nest in cliff holes, rock crevices, and trees. Their diet includes small mammals and juvenile prairie falcons.

Aquatic Wildlife and Habitat

Fisheries

Inventories and studies indicate that fish inhabit most streams in the planning area. The mountain sucker is the most common and widespread species, with flannelmouth sucker, speckled dace, mottled sculpin, and fathead minnow also being common. Most sampling has concentrated on areas where cool water species, especially trout, may be found. Because of this, data on distribution and abundance of fish species may not be entirely accurate for standing waters and warm water streams.

Mottled sculpin and speckled and longnose dace are indicator fish species of good water quality and a more stable stream habitat. In many cases, these fish and trout species are more common near the headwaters of streams and creeks where sedimentation and/or siltation are not as significant as further downstream.

There are 32 species of fish known to occur in the waters of the planning area. Five species of trout, kokanee salmon, and whitefish provide recreation fishing on public lands. Flannelmouth suckers and carp provide a recreation resource for archers during spring and summer. Nongame fish, their eggs, and fry also provide a forage source for game fish and other wildlife.

Three species are considered sensitive by the State of Wyoming: the Colorado River cutthroat trout, the roundtail chub, and the bluehead sucker. These species are native to the Green River drainage, but because of river and stream impoundments and other habitat losses, the populations of these species are low (Table 3-24). Colorado River cutthroat trout inhabit Upper Red Creek, Trout Creek, and Currant Creek.

Based on electrofishing samples conducted by the WGFD, typical trout populations on the upper reaches of most streams range from 600 to 3,500 fish per mile. Typical trout populations in the lower reaches of these streams range from 0 to 500 per mile. Brook trout is the most prevalent of the species occurring in most streams near the mountains. Rainbow and brown trout species are most common in faster moving, lower reaches of many streams.

There are serious data gaps associated with aquatic wildlife and wetland/riparian resources within the planning area. Although there have been quite a number of fish collection studies to determine species composition in many streams in the planning area (particularly the Green River, both pre-and post-impoundment studies), a data gap exists for other parts of the planning area. Population studies of the fishery resource throughout the planning area are essentially nonexistent. Surveys of the population levels of fish, both game and nongame, in the network of streams are needed to help determine the significance of specific streams and to assist in making management decisions.

There are no currently reliable instream flow data. Instream flow figures for streams throughout the planning area and flow requirements for fish species should be matched to help determine management strategies aimed at maintaining existing populations, expanding populations, or indicating areas where the best potential exists through habitat improvement to manage the aquatic resource.

Aquatic macroinvertebrate information is an excellent and proven way to monitor the health and trends of a stream. A study has recently begun on Currant Creek as part of a management effort to restore the habitat for the Colorado River cutthroat trout, but no other macroinvertebrate data has been collected by BLM in the planning area. some data may exist with Wyoming Game and Fish Department or Bureau of Reclamation.

Fisheries Habitat Requirements

Fish and other aquatic animals have specific environmental requirements. General recommendations on water quality for the maintenance of life functions of a mixed fish fauna include dissolved oxygen (not less than 5 mg/l), pH (6.7 to 8.6), carbon dioxide (not over 3 mg/l), conductivity (at 25°C., 150-500 mhos, with a maximum of 1,000-2,000 mhos permissible in western alkaline areas), ammonia (not over 1.5 mg/l), temperature (varies by species), and stream flow.

Two constituents shown to cause widespread fishery impairments are total suspended solids and heavy metals. There is considerable uncertainty about the proper criteria for these constituents necessary to protect fisheries in the planning area. Additional studies are needed to determine the magnitude at which fish are adversely affected. Any activity which increases total suspended solids, ammonia, heavy metals, or phosphates or reduces dissolved oxygen in the streams of the planning area will adversely affect water quality and fish habitat.

Stream Habitat

There are approximately 465 miles of intermittent streams and 1,132 miles of perennial streams (including the Green River) in the planning area. Under BLM-administered surface and mineral estate, there are 412 miles of perennial stream and 256 miles of intermittent (excluding the Green River). There are 109 miles of stream under "split estate" (excluding the Green River) on which BLM would have responsibility during a BLM-permitted action. Many more miles than this exist that are classified as ephemeral and are not included. Stream channel stability on inventoried sections (Smith 1975-1977) has been rated from 1 to 5 (excellent to poor, respectively) (Table 3-25).

Over half of the inventoried streams have the potential for significantly improved stream stability through various management practices. Detailed information on particular stream reaches and management recommendations is available in the Resource Area Office.

A major limiting factor to game fisheries habitat is the low availability of spawning habitat. This is primarily due to stream sedimentation, which in turn relates to channel stability. Spawning habitat typically consists of gravelly, rocky stream bottoms with stable banks which prevent or reduce the sediment load entering the stream. Sedimentation destroys spawning habitat. Only 16.7 percent of the stream miles surveyed had good to fair spawning habitat. The remaining 83.3 percent falls into a poor, virtually none, or not significant category. Protection and improvement of spawning habitat throughout the area should therefore be one of the main aquatic program emphases.

Riparian Habitat

Less than 3 percent of the planning area is wetland or riparian. Of this habitat type, the BLM has management responsibilities on only about 35 percent. Nearly 70 percent of the wildlife species occur in these small but crucial habitats. Moose, Swainson's hawk, raccoon, red fox, striped skunk, and most waterfowl species typify wildlife found in the wetland/riparian areas. From 40 to 50 bald eagles winter on streams in the planning area annually. Many endangered or sensitive plant and animal species such as whooping crane, bald eagle, merlin, and meadow pussytoes are indigenous to wetlands. Unfortunately, available water and cover, and the high forage productivity of riparian areas encourage high intensities of livestock and wildlife use which may result in degradation of these habitats.

Streams and wetlands in good habitat condition provide a niche for beaver, muskrat, mink, and otter. Streams with little vegetative diversity offer lower furbearer production with fewer species represented. Beaver have proven to be a most valuable wildlife resource in stream habitats. On tributaries, they prevent flooding, slow the rate of erosion, and clean the water. Trapped silt in dams often results in high production of willows, sedges, rushes, and cattails. Many of the wet meadows found in the planning area are the product of ancient beaver activity.

In 1994, efforts to inventory and rate riparian areas as to their functioning condition began. Of the nearly 700 miles of perennial and intermittent streams in the resource area, approximately 86 miles were rated in 1994. The condition classes and miles in each are shown in Table 3-26. Since this was the first year of the inventory, a majority of the stream miles are included as unknown. Unknown does not mean there is nothing known about the stream, but only means that it has not been recently inventoried and rated. Non-riverine riparian areas have not been rated.

Threatened, Endangered, and Candidate Species

Six federally listed endangered species and one state "sensitive" wildlife species inhabit or have inhabited the planning area. Endangered species include the bald eagle, whooping crane, peregrine falcon, gray wolf, grizzly bear, and black-footed ferret. The Colorado River cutthroat trout is a state listed "sensitive" fish species and a Category 2 candidate for listing as federally threatened.

Bald eagles are found primarily along rivers and inland lakes where their nests are usually located in large coniferous or deciduous trees. In the planning area, streams and rivers with trees are not common. Currently, the only known active bald eagle nesting sites are on the Green River above the Big Sandy confluence. No bald eagles are known to nest on BLM-administered lands in the resource area. There are potential nesting opportunities along Flaming Gorge Reservoir, the Henry's Fork River, and other waterways. The pioneering trend for bald eagle nesting began in the upper Green River system and activity moved slowly downstream to an island just outside the planning area in 1985. No raptor inventories were conducted on the river until 1990, when an active bald eagle nest was discovered within Seedskadee National Wildlife Refuge.

Bald eagles are classed as partly migratory. Winter finds bald eagles along major waterways. Bald eagles from the northern states and Canada tend to migrate greater distances than do local eagles. About the second week of October, bald eagles begin arriving on the Green River. This coincides with the kokanee salmon and brown trout run which is probably a primary source of autumn food. By Thanksgiving, bald eagles can be found on the Big Sandy and Little Sandy Rivers, in Eden Valley, and along the Black's Fork and Henry's Fork rivers. The bald eagle is a winter resident along the Green River and Flaming Gorge Reservoir. Few studies have been conducted to locate winter roosts in the planning area; however, aspen and conifers along headwaters of Currant Creek, conifers on Black Mountain, and other areas may be suitable for roosting. A known roost and activity area is in the Henry's Fork at the confluence of Antelope Creek, primarily on private land.

In the past four years, whooping cranes have found wetlands in the Farson area suitable for summer habitat, though none are known to nest in the planning area. Peregrine falcon nested on the Green River as late as 1967, but they are now only casual migrants on their way to and from the Greater Yellowstone Ecosystem.

There is a continuing effort to map prairie dog colonies and search for the black-footed ferret. Dozens of ferret sightings have been made by reliable sources in a variety of habitats. Night searches and daytime hole-to-hole examinations on about 3 percent of the planning area have not yet revealed a black-footed ferret. Populations of black-footed ferrets (if any) are undetermined in the planning area. There is historical documentation of presence of ferrets as late as 1963, when a ferret and kits were seen by several persons in the southwest part of Eden Valley. Other areas where ferrets are presumed to have occurred are Sublette Flats, Seedskadee Refuge, and the Red Desert. Potential areas of ferret habitat are easily delineated due to their association with prairie dogs and prairie dog colonies. Researchers have concluded that the black-footed ferret has never been very abundant based upon archaeological and historical evidence.

Colorado River cutthroat trout exist in Currant Creek, Trout Creek, the upper reaches of the Red Creek drainage, and possibly Sculpin Creek and the Little Sandy River. Please refer to Appendix 14-1 for more detailed information on individual threatened, endangered, and candidate species.

SPECIAL MANAGEMENT AREAS

Existing and proposed ACECs and other areas requiring special management are described in alphabetical order. Table 3-27 shows surface and mineral ownership in existing ACECs. Table 3-28 shows surface and mineral ownership in proposed special management areas.

Cedar Canyon ACEC

The Cedar Canyon ACEC was designated in April 1982, and published in the *Federal Register* on June 30, 1982. A management plan was prepared and approved February 4, 1983. The purpose of the ACEC was to provide special management attention to a unique group of resource values; specifically, to protect and prevent irreparable damage to prehistoric cultural values (petroglyph panels and Indian campsites), visual aesthetics, and critical wildlife habitat. These values were being threatened by off-road vehicle use, indiscriminate recreation, and mineral development (mostly oil and gas).

Cedar Canyon contains an extensive rock art site that probably is related to the Plains Indian culture, specifically Shoshone. These petroglyphs probably date to the Late Prehistoric period, and perhaps earlier. The panels of incised figures include stick figures and geometric designs. Additionally, Cedar Canyon contains valuable raptor habitat and crucial big game habitat.

The ACEC plan defined the basic terms and conditions for management and use of the area to ensure that necessary protective management would be applied. Mineral development was not precluded as long as development within the area is in accord with the special management requirements.

The ACEC encompasses 2,550 acres of BLM-administered public lands all within T. 22 N., R. 103 W. In 1978, 240 acres were nominated to the National Register of Historic Places (NRHP). The Keeper of the Register determined the site to be eligible.

The ACEC is within the current Coal Potential Area, but no coal leases cover the area. The ACEC is not within areas marked as Unsuitable for Coal Leasing as shown in the Big Sandy Management Framework Plan, summarized in the "Wyoming Land Use Decisions (Coal) for the Big Sandy Area."

There are 5 oil and gas leases on BLM-administered lands within the ACEC. The ACEC is within an area that has been determined to have high potential for the occurrence of hydrocarbons. It also has high potential for development of hydrocarbons within the next 20 years. Nine producing and 7 abandoned wells have been drilled. There is currently interest to drill more wells. Within one mile of the general location area, 15 producing and 10 abandoned wells have been drilled. Production has been established in the Frontier and Dakota formations. The Wyoming Oil and Gas Commission has established a 320-acre spacing for the area covering the Cedar Canyon ACEC. All but four of the 320-acre spacings contain a gas well or an abandoned well that has tested the Dakota and Frontier Formations. The south half of sections 7 and 10 and all of section 15 are the only sections with no well tests and are thus potential sites for future activity (see Table 3-10).

Numerous rights-of-way associated with oil and gas production exist in the ACEC, with more expected in the future as development continues. Development occurs on both public lands in the ACEC and adjacent private lands. There are 7 gas pipelines and 3 road rights-of-way present within the ACEC totaling approximately 8.3 miles of linear disturbance or 52 acres.

The Cedar Canyon ACEC is entirely within the Rock Springs Allotment which has authorized year-long use for cattle, sheep, and horses. In the immediate area, grazing occurs in the summer and winter. The allotment is currently in an M (maintain) category with satisfactory management.

Cedar Canyon is a result of significant erosion over a long duration. A resistant sandstone cap lies atop softer shales and mudstone, providing unequal weathering of sedimentary rock. Escarpments rise 100 feet or more above shale plateaus and rolling sand hummocks. Soils continually erode downslope toward the canyon's mouth resulting in lost soil horizons. Sediments are generally fine sandy loams, moderately high in pH (7.5 to 8.5) with good drainage. Some clay loams and sandy clay loams can be found in the valley floor. The soils are generally unstable and susceptible to erosion from any human influence.

The area contains high value raptor habitat. Raptor inventories of the area have been conducted by the University of Wyoming Wildlife Cooperative Unit. There are 24 raptor nests considered active within the ACEC (Table 3-29).

The canyon complexes around Cedar Canyon are considered crucial big game winter range for deer. Historical information indicates between 450 and 750 deer use the canyons in normal to severe winters. This area was also important winter range for elk, although they are seldom seen there now. Most elk observed in this area are typically moving through to other areas. Loss of this area as elk winter range is attributed to the large amount of oil and gas development taking place here. Of all the big game species in the planning area, elk are the least tolerant of human disturbance.

Disrupting activities presently occurring during winter periods are mostly due to maintenance and operations associated with mineral activity, and drilling activity on adjacent private land.

Big game browse condition is fair to poor. The long-term drought conditions have compounded problems with browse production and condition. Overgrazing by livestock (primarily domestic sheep) has also contributed to poor browse production and condition which limits its availability for deer. Overgrazing by livestock also affects raptors that use the area, because of the loss of rodent populations associated with vegetation loss.

Since preparation of the original ACEC Plan (1983), gas field development has impacted big game use and forage. Road building and pipeline construction have created more surface disturbance than drill pads. The access road and drill pad to Luff well 3-8 in SE¼ section 8, T. 22 N., R. 103 W., were reclaimed by BLM through reseeding grass and replanting tree species in disturbed sites from 1984 through 1988. Restoration of disturbed land in crucial habitats is important in offsetting impacts from energy development.

Cedar Canyon has been a popular attraction to recreationists for many years. Hiking, picnicking, and big game hunting are recreational pursuits common to the area. The varied plant and animal life found in this rugged area add to the recreational experience. Overnight camping and occasional parties took place at the petroglyphs in Section 18 in past years. The area currently receives use by several school groups each spring and fall for field trips, where they learn about the various resources located in this ACEC.

Greater Red Creek Area

The Greater Red Creek Area involves the watershed values in the Pine and Little Mountain drainage systems. The watershed system relates directly to the amount of sedimentation contributed to the Green River drainage through Red Creek, Currant Creek, Sage Creek, Vermillion Creek, Canyon Creek, and other associated drain-

ages. Watershed features such as water quality and stability are currently threatening the existence of Colorado River cutthroat trout through habitat deterioration.

The entire Red Creek watershed has been identified as 1) having highly erosive soils, 2) being subject to slumping, 3) having slopes greater than 25 percent, and 4) protecting riparian areas in need of protection.

The formations exposed at the surface in the area were deposited during the early part of the Tertiary age; only a small area along the border of Utah contains any rocks of Cretaceous age. The formations found within the area (from oldest to youngest) are: the Blair, Rock Springs, Ericson (all Cretaceous in age), Fort Union, Wasatch, Green River, and Bishop Conglomerate.

The proposed ACEC includes areas determined to have low, moderate, and high potential for development of hydrocarbons. The area has low to moderate potential for the occurrence of coalbed methane. The boundaries identified in the previous coal screening process did not encompass this area.

The area incorporates all or portions of 7 grazing allotments: Pine Mountain, Red Creek, Salt Wells, Sugarloaf, Spring Creek, Mellor Mountain, and Rock Springs. The area contains a portion of the Salt Wells Creek Wild Horse Herd Management Area, which has a management level of 251 to 365 head. Herd populations have remained at or near objective levels since institution of gathering. Herd objectives of age, color, sex, and general health have been met and maintained.

The area has no developed recreation sites. Recreation activity is dispersed, consisting of hunting, camping, mountain biking, sight seeing, and limited fishing. The area is limited to use of existing roads and trails for off-road vehicle use. Current recreation use of the area is moderate.

The vegetation composition of the area is not remarkable. However, the presence of several ecological features contributes to the uniqueness of the area. There exists a stand of pinion/juniper trees that are representative of the northernmost presence of this community. Several remnant stands of ponderosa pine, white spruce, and curlleaf mahogany are indicators that suggest the existence of an ecological line between significant communities that is drifting to the south.

Little Mountain and Pine Mountain are aspen/conifer mountain islands raising from sagebrush flats. The Pine Mountain timber compartment contains approximately 2,089 acres of commercial forest lands. The largest concentration of commercial conifer is lodgepole pine. It co-exists with subalpine fir, douglas fir, and aspen. The subalpine fir component is replacing the lodgepole pine. Most of the lodgepole pine sawtimber is overmature (120+ years). Many of the pole stands are quite old, with the small size resulting from stagnation. Aspen is found growing either in pure stands or mixed with one or more of the conifer species.

Pine Mountain and Little Mountain areas receive about 16 inches of annual precipitation, but the snow fence effect of the subalpine fir causes snow to be retained, and much more precipitation is accumulated.

Little Mountain is composed of mostly non-commercial woodland types. It contains approximately 1,821 acres of commercial forest lands. Juniper appears in fairly continuous, moderately stocked stands from I-80 down through the Firehole Canyon and south toward the Little Mountain area and continues around the west side of the mountain. Small amounts of pinon pine are associated with juniper in the Iron Mountain, Wild Horse Basin area, and in the Red Creek Basin in small amounts.

Little Mountain has several tree species that are major components in the stands. Aspen has historically been the primary tree species in the area, but over time, subalpine fir has achieved dominance in the stands due to vegetative succession. Subalpine fir requires 18 to 20 inches of precipitation but exists in an area that receives 16 inches, due to the snow fence effect.

Much of the timber on both Little and Pine mountains is in a decadent condition with a great deal of bug kill, resulting in a buildup of fuels within the stands. An extensive wildfire could remove the timber along with the ability to retain large amounts of snow, resulting in the loss or reduction of perennial flows in many of the streams and springs on both mountains.

Four J Basin is characterized by extremely steep slopes, highly erosive soils, slide areas, deep channelization, and unstable drainages. The area drains into Canyon Creek and eventually into the Green River. Portions of Canyon Creek are non-functioning. The cliffs along the rim provide habitat to many nesting raptors and are considered the most important raptor habitat in the resource area. The timber and riparian areas are used frequently by elk and are important habitat for the tri-state area elk herd.

Small wetlands of one acre or less are created by springs or seeps on Little Mountain and Pine Mountain. Some small wetlands are also located on Richards Mountain and Tepee Mountain, but are uncommon because of the wind exposure and other factors. Beaver dams at headwaters of streams are the most common natural wetland. Average size of beaver pond wetlands are 0.78 acres. Some artificial wetlands exist in upper Red Creek Basin and in Pine Mountain Allotment; most are the result of stock pond construction. All of the larger impoundments like Pine Lake, Pete's Place reservoir, and impoundments off Red Creek, are badly silted and provide marginal habitat for sport fish.

Streams in the area are characterized by seasonal augmentation by snowmelt and rains. Stability is achieved by armoring with vegetation and residual litter. There are 47 miles of intermittent streams and 157 miles of perennial streams (total 204 miles) within the area. Survey work has been conducted on about 73 miles of the perennial stream and about 7 miles of the intermittent streams. This leaves 124 miles with little or no official baseline data. Water quality data exist for many of these streams.

The quality and health of the riparian area vegetation directly relates to the stability of the stream channel, water quality, and fisheries habitat conditions. Currently, the Colorado River cutthroat trout exists in some measure in Currant Creek, Red Creek, and Trout Creek (a total length of only about 10 miles). Historically, the trout would have existed in nearly every perennial stream within the Greater Red Creek area (including Sage Creek, Red Creek, Vermillion Creek, North Fork Vermillion Creek, Coyote Creek, and Canyon Creek). Many natural ponds, lakes, and springs associated with Little and Pine Mountains are important to wildlife in the area and for base flows of the streams.

The North Fork of Vermillion Creek is a top priority stream for re-introduction of Colorado River cutthroat trout by the Wyoming Game and Fish Department. The quality of the fisheries habitat needs to be improved for re-introductions to take place, and this can only be accomplished by restoring the riparian vegetation communities to an upper seral stage and stabilizing the streambanks.

The existing Red Creek ACEC was designated to reduce erosion in an area of naturally high geologic erosion, which has been accelerated by activities such as grazing, pipelines, and roads. The ACEC was designated in 1981 and published in the *Federal Register* on June 30, 1982.

The Red Creek watershed is a basin common to southwest Wyoming and northeast Utah. The drainage area is approximately 144 square miles of which 35 square miles are in Utah and 109 square miles in Wyoming. The topography is rough and broken, ranging in elevation from 5,500 feet at the confluence of Red Creek and the Green River in Utah to 9,500 feet along the divide near the upper end of the basin in Wyoming. Currently, the ACEC is managed in conjunction with the Diamond Mountain Resource Area (Utah).

Red Creek has an extremely high annual sediment yield (84,433 tons/year, average 1972-1976). This high sediment load is a major concern of groups interested in the recreational value of the Green River in Utah below the confluence with Red Creek.

Erosion within the Red Creek Watershed is attributed both to natural processes (geologic erosion) and to accelerated erosion brought about by human activity. Historically, Red Creek has been an area of severe natural erosion resulting from the combination of soft bedrock formations, steep topography, and precipitation rates and patterns. Rainfall is insufficient to produce dense vegetation, and summer storm events occur as cloud bursts that result in high peak flows. Intensive grazing by sheep in the late 1800s and early 1900s, and by cattle later in the 1900s, has altered the vegetative canopy resulting in increased runoff. When the volume of runoff is increased or is concentrated in natural or artificial channels, its erosive energy is increased. The improvement of county roads within the eastern half of the watershed and the Mountain Fuel road on the west side of the basin have also accelerated erosion. Increased water velocity caused by improper placement and lack of outlet protection for culverts has initiated severe gullying in several tributaries of Red Creek.

The control of geologic erosion, by and large, is often difficult to achieve because the natural conditions that have prevailed over time cannot be changed significantly to effect any great reductions in erosion. The most viable method for sediment reduction is to reduce and control accelerated erosion caused by human's activities. Watershed management plans will focus on opportunities for controlling accelerated erosion.

Big Game

The broken topography, incised canyons and variety of habitats makes this area among the most attractive and most valuable for the wildlife resource. Crucial big game winter range for antelope occurs in lower Red Creek, Spring Creek, and along Flaming Gorge. Deer winter along Currant and Sage Creeks, south of Titsworth Gap, and in the Red Creek Basin. Elk crucial winter range occurs on ridges from Sheep Mountain south to the Utah border and eastward through the Pine Mountain and Four-J Basin area (see Table 3-30). Potential big horn sheep habitat occurs on Richards Mountain, and transplants into Utah will probably lead to their occurrence there in future years. Fair moose habitat exists on several waterways and on Pine, Tepee, and Little Mountains.

Although the Wyoming Game and Fish Department has not identified specific calving and fawning habitats, calving and fawning occur in many parts of the area. Specifically, the northwest portion of Pine Mountain, headwater of Red Creek, and top of Little Mountain are suspected elk calving areas. Deer fawn in a wide variety of cover areas including Trout Creek, Dipping Springs Canyon, Upper Red Creek Basin, and June Creek. Any vigorous aspen stand with water and good forage nearby will offer suitable deer fawning habitat.

Although uncommon, mountain lions are found in the Iron Mountain-Little Mountain area down to the Glades. The deep canyons, poor road system, and abundant prey species found here offer good habitat for the big cats. Over the past 20 years, black bear have been noted on Tepee, Pine, and Little Mountains. Fair to good bear habitat exists in the Greater Red Creek area.

Raptors

Canyon Creek and its side canyons are by far the most important raptor area between Rock Springs and the Yampa River. About 41 of the 91 raptor nests in the area are found in this area. Rugged steep walled canyons and an abundance of prey favor continued use of these habitats. Table 3-31 lists raptor species found in the area.

Small Game and Nongame

The only place in the planning area where ring-tailed cats have been collected or identified is in canyon and rock outcrop habitats near Flaming Gorge along the western border of the area. This mammal is listed as "rare" in Wyoming. Another "rare" species of interest is the midget-faded rattlesnake, which occurred along the Green River and tributary canyons before construction of the Flaming Gorge dam. Presently, it is known to occupy dry canyons east of the Gorge and along the reservoir.

A 1978 inventory of Red Creek Basin yielded no prairie dog colonies. Within the boundaries of the Greater Red Creek area are few white-tailed prairie dog colonies, primarily near the Flaming Gorge boundary and on the plateau south of Canyon Creek. Potential for black-footed ferrets is remote. Richardson's ground squirrel is the most common rodent, along with the least chipmunk and white-footed deermouse. This area is home to the northern flying squirrel where conifer and aspen provide an important habitat niche. Other wildlife in the area include red fox, porcupine, bobcat, spotted skunk, white-tailed jackrabbit, cottontail rabbit, weasel, and short-horned lizard.

Greater Sand Dunes ACEC

The ACEC was designated to protect geologic, cultural, and wildlife values. The Sand Dunes are part of the larger Killpecker dune field, one of the largest active dune fields in North America. The Killpecker dune field encompasses approximately 109,000 acres, extending 55 miles east from the Green River Basin across the Continental Divide into the Great Divide Basin. In 1982, the Greater Sand Dunes (including Boars Tusk) was designated an ACEC. The ACEC is comprised of an estimated 41,640 acres (approximately 38 percent of the Killpecker dune field) (see Table 3-27).

The ACEC is unique to the Wyoming Basin and contains values that are "geologically, aesthetically and biologically interesting" (McGrew, et al. 1974). In addition, the ACEC includes prehistoric and historic values, diverse wildlife use, high recreation use that has the potential of increasing significantly, and high oil and gas values.

A management plan was completed for the Greater Sand Dunes ACEC in 1983, but is no longer current. For example, the level of oil and gas development in the eastern half of the ACEC is considered to be in conflict with the intended preservation and protection objectives of the designated ACEC.

The Big Sandy MFP identified continued oil and gas development as acceptable, provided "the natural values of the Greater Sand Dunes are maintained through its designation as an ACEC." The MFP specified that protection would be provided through protective stipulations, or in some cases through administrative closure to limit impacts associated with mineral development.

When the 1983 plan was prepared, there were 10 producing gas wells in the ACEC, 2 of which were in the Sand Dunes WSA. This

level of development was considered acceptable in 1983 and it met the ACEC objectives.

Presently, there are 18 producing gas wells within the ACEC, 1 of which is inside the Sand Dunes WSA. Industry is interested in developing this area further. To remain consistent with the purpose and intent of the ACEC, clear and specific management direction is needed on whether further oil and gas development will be allowed within the ACEC, and if so, where and at what level.

A proposal to designate "Boars Tusk/Killpecker Dune Field" as a National Natural Landmark (McGrew, et al. 1974; Knight, et al. 1976) was received by the National Park Service in 1979. The Park Service has asked that consideration for this National Natural Landmark resource be given by the BLM in authorizations within the area so that no change occurs to the ecological or geological features characteristic of this natural region. The area proposed as a landmark is within the proposed wilderness area, except for the immediate vicinity around Boars Tusk. The Crookston Ranch site (40 acres) is potentially eligible for the National Register of Historic Places as a representative example of vernacular architecture within the Wyoming Basin homesteading era. The Crookston Ranch is also a prime candidate for designation as a National Rural Historic Landscape because of the association between natural landforms and human modifications within a documented historical context.

The Buffalo Hump and Sand Dunes Wilderness Study Areas are located within the western part of the Greater Sand Dunes ACEC (Map A). Parts of both the Buffalo Hump and the Sand Dunes WSAs (collectively approximately 60 percent of the ACEC) were recommended as suitable for preservation as wilderness.

The eastern part of the ACEC lies outside and east of Buffalo Hump and Sand Dunes WSAs. Existing uses include oil and gas operations, livestock grazing, and a diversity of recreation activities.

Nonmotorized activities occur in the area. There are an estimated 550 to 650 visitor days spent annually on recreation activities such as hiking and photography. Nonmotorized hunting in the area attracts an estimated 80 to 100 hunter days annually. This use is expected to increase to approximately 120 hunter days annually by the year 2040.

There is the opportunity to provide for a variety of public recreation experiences within this area through visitor awareness, information, and interpretation. Sweetwater County and the City of Rock Springs are actively pursuing these kinds of opportunities to enhance the interest and attractiveness of Sweetwater County and to bolster area economy.

Mammals

Valuable habitat for big game is found throughout the Greater Sand Dunes ACEC. One of the unique features of the area is that the dunes help to support the only herd of elk known to occupy desert habitat. Large numbers of elk occupy the area during the spring, summer, and fall, using the ponds found throughout the dunes as their source of water and the broken topography and relative inaccessibility for escape. During the winter, they generally migrate east. During the summer, mule deer can also be found in the area and may stay throughout the winter. Antelope occupy the flatter, southern portions of the ACEC year-long. Other mammals common to the area include badgers, weasels, jack rabbits, cottontail rabbits, and several species of rodents. The ACEC also contains whitetail prairie dog colonies; however, no colonies occur in the vicinity of existing wells.

Avifauna

Excellent waterfowl habitat is provided by the many fresh water ponds found through the ACEC. Waterfowl species use these ponds for nesting in the spring, raising young in the summer, and staging in the fall. Also, a variety of song birds use the ponds during spring and fall migration.

Raptor habitat in the ACEC is limited, due to a general lack of suitable nesting sites. No raptor inventories have been conducted in the ACEC due to its low raptor potential.

Amphibians

Amphibians, such as the tiger salamander, can be found in the many ponds that occur in the ACEC.

Monument Valley Area

The Monument Valley area is located in the southeastern portion of Sweetwater County. The northern boundary incorporates the Haystacks, and the western edges of the Washakie Basin make up the western boundary. The district boundary serves as the eastern boundary, and the northern part of the Adobe Town WSA is included in the southern portion of the area. Sandstone, mudstone, and clay formations provide the erosional characteristics of cliffs, arroyos, rock pinnacles, canyons, and wide ravines. The main physical features of the area include geologic formations, extensive paleontology, and important cultural resources. Other features include wildlife (including wild horses), watershed/vegetation, recreation including off-road vehicle use, livestock grazing, and mineral resources.

Approximately 44,920 acres of the Adobe Town WSA are included in the area and are currently administered in accordance with "Interim Management for Lands Under Wilderness Review" guidance. Of that acreage, some 4,480 acres have been recommended for wilderness designation.

There are 3 pipeline and 3 road rights-of-way within the area. Wildfire is not a major concern due to low vegetative productivity and lack of structures.

A limited number of cultural resource inventories have been conducted in the area. These were all related to development of linear rights-of-way. This information, in addition to reports from avocational archaeologists, indicates that the area has a high density of historic properties. Cultural sites are primarily either PaleoIndian localities in excess of 6,000 years or late Prehistoric site dating to 1,500 years ago. The Haystack and Basin areas likely contain the oldest retrievable cultural evidence in the planning area. More recent cultural groups also inhabited the region. The unique sequence of prehistoric occupation and the vast quantity of information yet to be retrieved make this an area of particular interest. Additional archeological investigations are needed to develop specific management guidance for protection of these important resources.

Geological formations within the Monument Valley area were deposited during the Eocene Era and are largely composed of clay, shale, mudstone, and sandstone. During this era, the area was a wet, well vegetated lowland, rich in tropical and semitropical flora and fauna common to the time. Active volcanos to the north and west deposited large amounts of ash which account for the common occurrence of bentonite and zeolite today. Millions of years of erosion have removed the overburden exposing sand and mudstone outcrops, escarpments, rock pinnacles, and other geologic configurations.

The area is included in the Rock Springs Allotment. Forage production is low and water is poorly distributed. The area is identified for year-round use but is primarily used in the winter months by sheep and cattle.

The general area has been determined to have a moderate to high potential for hydrocarbon deposits. Three natural gas wells are producers, and a fourth well produces both natural gas and oil. Six wells were drilled and abandoned. That portion of the area within the Adobe Town WSA is presently closed to oil and gas leasing. The rest of the proposed area is open to leasing and is presently leased.

An oil shale withdrawal affects the area; however, it is presently under recommendation for revocation. Little potential exists for salable minerals such as topsoil, gravel, or flagstone. Neither coal nor sodium exist in commercially minable quantities.

The area has potential for a wide variety of scientifically significant fossils. The Washakie Basin contains one of the best exposures of Middle and Late Eocene rocks and fossil information in Wyoming. Fossil collection has taken place since the 1860s. Many of these collections are now displayed at major universities and museums. Paleontologists continue to discover unknown species.

The area provides for primitive recreational opportunities including camping, hunting, sightseeing, and photography. Limited ORV use is allowed on designated roads.

The entire area is considered a high desert environment with an annual rainfall of 7 to 9 inches. Precipitation can be characterized as high magnitude, low frequency runoff events. The area is highly susceptible to wind and water erosion. There are 4 natural playa lakes and several artificial reservoirs. Sand Creek is the only stream and is classified as intermittent with possible torrential runoff during spring snowmelt and summer storms. Five springs and seeps provide minimal riparian habitat but are not considered dependable water sources.

Vegetation is typical of the high desert environment with alkaline soils supporting saltbush and low density sagebrush communities. High density sagebrush and related grasses and forbs may be found in isolated areas. Greasewood communities can also be found. Areas essentially devoid of vegetation include rock outcrops, badlands, and steep slopes. Due to climatic and soil conditions, any surface disturbance is difficult to reclaim.

Mule deer, mountain lions, and ferruginous hawks are found along the Haystacks. Eagles, prairie falcons, hawks, and owls are found on clay buttes and rock monuments. A diversity of small mammals provide food for predators including raptors, coyotes, badgers, and bobcats, among others. Antelope are the primary browsing species.

The Adobe Town Wild Horse Management Area plan provides guidance for wild horse management within the proposed area. Present population objectives in this portion of the management area are 165 to 235 horses. The 1993-94 inventory estimated the population in the resource area at 257.

Natural Corrals ACEC

The Natural Corrals ACEC is managed primarily for cultural, historic, geologic, and recreational values. The lands within this ACEC are on the eastern flank of the Rock Springs Uplift (and within a large intermontane basin bounded by the Wind River Mountains to the north), the Uinta Mountains on the south, the Overthrust Belt on the west, and the Sierra Madre and Granite Mountains toward the east. The Natural Corrals ACEC was designated in April 1982 and published in the *Federal Register* on June 30, 1982.

The Natural Corrals is a picturesque area of sharp ridges and small, narrow draws lined by sharp massive boulders of volcanic rocks. Some of these boulders are as large as small houses. The crevices between many of the boulders are large enough for a human to enter, and some deep enough that ice forms in the winter and may be preserved until mid-summer. These areas are known as ice caves. Water is trapped in fissures occurring in the volcanic rock and among the boulders, providing the source for the springs found at the Natural Corrals. The term "Natural Corrals" is apparently derived from a narrow draw in the area occupied by a spring and a small, wet meadow.

The area contains prehistoric archeological sites ranging from PaleoIndian to Protohistoric. The unique geological features apparently attracted people from both Great Basin and Plains culture areas. Some artifacts from the area may relate to prehistoric/historic trade networks.

The area consists of 1,276 acres. A 20-year withdrawal of 357.34 acres in T. 21 N., R. 101 W., Section 18 does not allow settlement, sale, location, or entry under general public land laws including the mining laws (subject to valid existing rights). The purpose of the withdrawal is to protect archeological values and geologic values from adverse impacts associated with construction projects, mineral production, and unregulated recreation activities.

Recreation opportunities exist for camping, picnicking, winter sports, and a variety of outdoor activities.

This ACEC lies within the Divide Basin Wild Horse Management Area. Use by wild horses in the Natural Corrals ACEC is minimal.

Oregon Buttes ACEC

The Oregon Buttes ACEC was designated in April 1982 and published in the *Federal Register* on June 30, 1982 to protect the scenic integrity as a historic landmark. The Oregon Buttes ACEC lies on a structural platform which joins the Rock Springs Uplift to the Wind River Mountain Range (Zeller and Stephens 1969). At Oregon Buttes, the Continental Divide splits into east and west rims, which rejoin at Bridger's Pass, south of Rawlins, and encloses an area known as the Great Divide Basin.

Because the Buttes are a dominating landform, they were faithfully noted by emigrants using the Oregon Trail, marking the halfway point in their journey from Independence, Missouri, to the Pacific Ocean. The Buttes also denoted the Continental Divide and the point where they crossed into the Pacific watershed.

The Oregon Buttes provide excellent wildlife habitat. The area is used heavily by big game species, and the Buttes themselves are occupied by many raptors.

Bird watching, wildlife photography, rock climbing, backpacking, hunting, horseback riding, and sightseeing are uses which now exist in the area. These uses are compatible with the goals for the ACEC.

Pine Springs ACEC

The Pine Springs ACEC (south of Green River) was officially designated an ACEC in the Salt Wells MFP (April 16, 1982) and published in the *Federal Register* on June 30, 1982. The ACEC was designated to protect cultural resource values. This site is one of the most significant prehistoric campsites in southwest Wyoming. The site was continuously occupied from about 8000 B.C. to 1200 A.D. Cultural values at Pine Springs are potentially threatened by vandals and by cattle and sheep trampling in the area. One of the greatest dangers to cultural resources may result from intentional vandalism and illegal collecting.

The Pine Springs site is one of several prehistoric archeological sites in the lower Bridger Basin that are situated around mountainside springs formed as the result of geological processes. Glacial erosion surface remnants (the Gilbert Surface), capped by glacial outwash from the Uinta Mountains (the Bishop Conglomerate) now stand as buttes with surfaces sloping gently toward the center of the Basin. Later erosion surfaces are represented by lower buttes and long-sloping benches which flank the higher Bishop Conglomerate-capped buttes (Sarrock 1966).

Pine Springs, at 7,600 feet elevation, supports a community of aspen, chokecherry, and cottonwood, which rarely grow at elevations exceeding 7,000 feet. This stand of broadleaf trees displays brilliant autumnal coloration, while Engelmann spruce, subalpine fir, and junipers are a striking contrast amid the high desert vegetation (Salt Wells URA).

The area is considered low potential for fluid mineral development and some potential for sodium mineral development.

Pine Springs Expansion Area

The Pine Springs Expansion Area (south of Green River) includes several historic properties including clusters of stone circles (tipi rings), prehistoric campsites, and stone quarries, as well as the Pine Springs stratified prehistoric campsite. Stone circle sites are rare in the Green River basin but relatively common elsewhere in Wyoming. They may be indicative of an interface between cultures from the Great Basin and Great Plains areas. This complex of cultural features represents thousands of years of human occupation in southwestern Wyoming. Stone circle sites and stratified archeological sites are important resources for addressing a number of research questions. These sites are especially sensitive to surface disturbing activities.

Most soils in the area are derived from shales, sandstones, or alluvium. Generally, soils have formed in residual material weathered from bedrock, colluvium, alluvium, basin deposits, and outwash. Permeability is moderate and in much of the area, soils are less than 40 inches deep over bedrock (Sharrock 1966).

Vegetation is clustered around the main spring outlet and along the watercourse between the parallel ridges. Species include various grasses, sagebrush, chokecherry, currant, serviceberry, quaking aspen, Rocky Mountain and Utah juniper, and Englemann spruce. The spring is locally known as Pine Springs because these spruces, standing as high as 100 feet, are mistakenly thought to be pines (Sharrock 1966).

The band of streamside vegetation extends down the mountainside approximately 300 yards from the spring outlet and shows an interesting gradation from serviceberry to aspen to englemann spruce to aspen to narrowleaf cottonwood, in a downstream direction, respectively (Sharrock 1966).

Vegetation in the Pine Springs expansion area away from the spring itself primarily consists of low density sagebrush LANDSAT classifications although saltbush, high density sagebrush, greasewood, and barren LANDSAT classifications are present in small amounts.

Red Desert Watershed Area

The Red Desert Watershed Area encompasses 645,570 acres of which 481,930 are public lands (federal surface/federal minerals, federal surface/private minerals, or private surface/federal minerals) administered by BLM. The Red Desert Watershed Area includes all of the Great Divide Basin within the resource area. The Great Divide Basin is one of only a few closed basins found in the United States.

Six Wilderness Study Areas (Alkali Draw, South Pinnacles, Alkali Basin-East Sand Dunes, Red Lake, Honeycomb Buttes, and Oregon Buttes WSAs) are located within the watershed area. Of the six WSAs, Honeycomb Buttes and Oregon Buttes have been recommended for wilderness designation for a total of 40,900 acres within the watershed boundary. Approximately 10 to 20 acres of the northeast corner of the Cedar Canyon ACEC and approximately two-thirds of the Oregon Buttes ACEC are also included in the area.

Cultural Resources

There has been less formal inventory for cultural resources in the Red Desert area than anywhere else in the planning area. The limited inventory indicates that there is likely the same density and diversity of sites in the Red Desert area as elsewhere in the planning area.

The Morgan Site is a stratified prehistoric site that may date to PaleoIndian times (ca. 10,000 years before present). There is good potential for other PaleoIndian sites to be found in the vicinity. An Archaic housepit site was excavated on the Frontier Pipeline in the Buffalo Hump area. Several stone circle sites are located below Steamboat Mountain. A very old rock art site exists west of Black Rock.

Historic resources in the area include the Point of Rocks to South Pass freight road and stations at Freighters Gap and Rador Springs. This historic linear corridor is significant on a regional level. The Rador Springs station is eligible for the National Register of Historic Places. It has been the subject of study by Western Wyoming College historical archaeologists. The exact location of the Freighter Gap station is not known.

There are some sites related to early ranching in the Red Desert area, but most of these are on private land. A historical context for the area has not been written, and the significance of particular sites should not be evaluated without some kind of areal context.

The Eden-Farson and Finley sites and the important rock art sites in Cedar Canyon, Pine Canyon, and White Mountain are not included within the boundary of the Red Desert area. The Red Desert area does not seem to have any particular unifying settlement pattern reflected in the prehistoric or historic record. However, there is a very limited data base to analyze. There are undoubtedly important sites in the sand dunes within the area. Otherwise, the Red Desert area probably does not differ remarkably from the remainder of the planning area.

Livestock Grazing

The entire watershed area is open to grazing. Six grazing allotments encompass 645,570 acres within the watershed. There are 21.37 miles of allotment fence (primarily along the district boundary) and 1.9 miles of drift fence. Thirteen reservoirs, 1 spring, 1 pit, and 5 water wells found on public lands provide some of the water necessary for livestock and wildlife.

Minerals

Oil and Gas

Table 3-32 represents potential for development of oil and gas in the Red Desert Watershed Area.

Two concentrated drilling areas occur in the Red Desert Watershed Area. The Greater Nitchie Gulch field currently affects 4,415 acres in the westernmost portion, while the Wamsutter Arch field affects over 36,840 acres in southeastern portion of the area. The BLM-administered public lands within the watershed area is open to

leasing, except those areas with post-FLPMA leases currently managed under the Interim Wilderness Management Policy and Guidelines for Lands under Wilderness Review (about 93,000 acres). Once final wilderness determinations are made, those areas not selected will be opened to leasing, although some areas may require special stipulations to protect unique resources.

No surface occupancy restrictions affect 2,540 acres of public land, and seasonal restrictions for protection of big game crucial winter range and calving/fawning areas affect 72,750 (federal surface only) acres. Seasonal restrictions for protection of raptors could affect up to a maximum of 960 acres per active nest depending upon the topography.

Coal

Most of the watershed area is underlain with deep deposits of coal. Only 46,740 acres, however, have coal at depths economically feasible to mine. No coal mining activities are occurring in the watershed area at this time, although there is a proposal to expand mining operations northwest of the Jim Bridger Power Plant.

Coalbed Methane

Coal gas is present only where coal is found; thus, the potential exists for development in the southern half of the watershed area. Limited exploration and no development for coalbed methane has occurred.

Mineral Materials

Potential exists for development of mineral materials (sand, gravel, and volcanic rock) on about 11,980 acres.

Locatable Minerals

A number of current mining claims affect the northeastern portion of the planning area, specifically areas north of the Honeycomb Buttes and Oregon Buttes and in the vicinity of John Hay Reservoir. No Notices or Plans have been received for any of these claims.

Seismic Activities

Other than wilderness study areas (although seismic activity can occur within WSAs depending upon the method used), the entire watershed area is open to seismic activity.

Geology and Geologic Hazards

The Red Desert Watershed Area lies within the western portion of the Great Divide Basin. The Great Divide basin covers approximately 3,500 square miles and is an internally drained (or closed) basin. The most evident feature of the basin is the dry-lake flats. These shallow depressions are the remnants of Pleistocene era lakes.

Other geologic features found in the area include badlands, flat-topped mesas, isolated buttes, and active sand dunes. Over 6 miles of faults in the northeastern sector of the area affect the watershed area, of which 5.98 miles are located on public lands. Landslides can occur around areas of steep terrain and affect approximately 415 acres. Windblown sand is a common occurrence, affecting up to 44,380 acres in the watershed. Vertebrate fossils of scientific significance have been found in other parts of the planning area in formations like those in the Red Desert Watershed Area.

Off-Road Vehicles

Off-road vehicles include a diverse mode of transportation including 4-wheel-drives (the most common), dirt bikes, and dune buggies. ORV use has been limited to existing roads or trails.

Recreation

The watershed area provides many recreational opportunities. Sight-seeing and hunting are two of the most popular forms of recreation, while rock hunters can find a variety of interesting rocks, including petrified wood and agates around the Oregon Buttes area. Outstanding opportunities exist for solitude. Several types of tours are available to individuals or groups, including wagon train, horse, and mountain bike tours.

The management objectives are to develop, maintain, preserve, or enhance the various recreational activities such as camping, picnicking, winter sports, and collecting that occur in the Red Desert Watershed Area, provide for an optimum and satisfying visitor experience, and enhance hunting and fishing opportunities to maximize the visitors recreation experience. Camping restrictions limit camping to 14 days.

Rights-of-Way/Withdrawals

Two major pipelines are now located in an east-west route about 33 miles long. A right-of-way window from north of I-80 at the border of the Great Divide Resource Area ties into the east-west route.

There is a 129-mile county road network within the Great Divide Basin, in addition to 66 miles of private and BLM roads.

The Great Divide Basin is encumbered by the coal withdrawal, which precludes disposal of the coal resource. In addition, a stock driveway withdrawal is located along the eastern border of the basin.

Soils

The Red Desert Watershed Area is dominated by well to excessively drained soils from 10 to 40 inches deep over bedrock. The dominant soil types have a sandy loam, fine sandy loam, or loam surface and substrata. These soils formed on upland plains dissected by rocky ravines, short escarpments, and draws. Slopes range from 5 to 30 percent.

Scattered throughout the basin are very deep, moderately well drained soils dominated by silty clays. These soils formed in level basins and on fans derived from alkaline and saline lacustrine deposits. Included are areas of playa lakes which seasonally retain water. Slopes range from 0 to 3 percent.

The Killpecker Dune field, composed of active and dormant sand dunes, traverses the area. Slopes range from 5 to 30 percent.

Vegetation

Vegetation in the Red Desert Watershed Area primarily consists of big and low sagebrush communities found under the low density sagebrush classification (less than 35 percent ground cover). The big sagebrush community generally occupies areas where precipitation averages 7-9 inches per year and soils are sandy or loamy, well drained, and non-alkaline. The major shrub component of the big sagebrush community is Wyoming big sagebrush; other species commonly found in this ecosystem are: rabbitbrush, winterfat, sandberg bluegrass, wheatgrasses, ricegrass, sandwort, and buckwheat.

Vegetation associated with the low sagebrush community can be found on windswept ridges or in areas where shallow soil exists. Alkali sagebrush or black sagebrush dominate this community

depending upon soil conditions and precipitation amounts. Alkali sagebrush and associated vegetation (e.g., shadscale, wheatgrasses, sandberg bluegrass, and milkvetch) is common in highly alkali soils, while black sagebrush is found in areas where precipitation averages 10-14 inches per year and shallow calcareous soils exist. Phlox, bitterbrush, mountain mahogany, sandwort, sandberg bluegrass, and violets are commonly found in association with black sagebrush.

Big sagebrush communities under the high density sagebrush classification (ground or canopy cover in excess of 35 percent) are found in areas where elevation exceeds 7,000 feet and precipitation averages above 9 inches a year, on deep, loamy or sandy soils. Common species associated with high density Wyoming sagebrush are: douglas rabbitbrush, phlox, thickspike and bluebunch wheatgrass, needlegrass, and great basin wildrye.

Significant pockets of saltbush (Gardner's saltbush, winterfat, Indian ricegrass) and greasewood communities (saltbush, meadow barley, Sandberg bluegrass) exist throughout the watershed. Saltbush communities are found in clay soils associated with badland topography, colluvial deposits, and alluvial outwashes. Topsoil usually has a high salt content and vegetation is generally sparse. Greasewood communities inhabit flat, alluvial fans, floodplains adjacent to intermittent streams, and stabilized sand dunes. Soils are fairly deep, poorly drained, and at least moderately alkaline.

Intermittent streams, springs, and seeps support small riparian vegetation communities. Meadows may ensue anywhere a spring or seep occurs. Vegetation is mainly comprised of grasses and forbs including Nebraska sedge, bluegrasses, pusseytoes, milkweed, and iris, while on the outer edges mesic grasses such as bluegrass or basin wildrye, along with silver sagebrush, may be found. Isolated cottonwood communities exist in the Chicken Springs area.

Lesquerella macrocarpa is a candidate plant species under review for listing as threatened or endangered under the Federal Endangered Species Act, and can be found on Bush Rim, Oregon Buttes, and Continental Peak. *Lesquerella macrocarpa*, large-fruited bladderpod, occurs on sparsely-vegetated clay flats, benches, slopes, and hills. It is found in association with Gardner's saltbush.

Visual Resources Management

The Red Desert Watershed Area lies in the Wyoming Basin physiographic province. The public lands will be managed in accordance with visual resource management standards to protect, maintain, and enhance the visual resource values.

The major portion of the watershed area has been identified as Class IV, incorporating over 525,000 acres. Class IV classification allows for modification to the landscape character; however, any change should reflect the character of the overall landscape.

The westernmost portion of the area has been identified as Class III, encompassing over 28,000 acres, although isolated flat-topped mesas and buttes are qualified as Class II.

East Sand Dunes, Oregon Buttes, and Honeycomb Buttes have been identified as Class II, which affects over 40,000 acres. Class II designation mandates that any changes must not be evident to the extent it attracts attention away from the original character of the existing landscape. Should Oregon Buttes and Honeycomb Buttes be designated as wilderness, classification would be upgraded to Class I, thereby allowing very limited management activity and only to the extent that it does not attract attention.

Watershed

The Red Desert Watershed Area falls within the Great Divide Basin, hydrologically a closed basin. Most streams are intermittent and flow toward the center of the basin into playa lakes where they either recharge the aquifers or, more likely, evaporate.

Artesian groundwater, as well as unconfined groundwater, is found throughout the watershed area. Generally, sedimentary rocks associated with the flanks of the surrounding uplifts create favorable conditions for extensive artesian groundwater systems. Although unconfined groundwater is found, water movement is generally toward the central part of the Great Divide Basin. Few studies on groundwater occurrence within the Red Desert have been conducted to date. Five formations known to contain groundwater within the watershed area include the Bridger, Laney Shale, Wilkins Peak, Tipton Shale, and Wasatch formations. Water quality ranges from poor to good depending on the formation. Generally, the quality of groundwater decreases with depth. Most existing wells range from 500 to 1,200 feet in depth.

The Almond Formation, a good potential source of domestic drinking water, is found in the western rim of the area.

Wild Horses

The Red Desert Watershed Area contains 612,370 acres of the Great Divide Basin Wild Horse Management Area. The wild horse area is managed by objectives outlined in the Divide Basin Wild Horse Herd Management Plan implemented in 1982. This plan provides for the protection and management of 415 to 600 wild horses. Management objectives of diverse age, color, sex, and general good health have been achieved and are presently being maintained.

Wildlife Habitat

The Great Divide Basin is a cold, high elevation, desert environment. Low precipitation, short growing season, and cool average ambient temperature result in limited plant growth and forage production. Saline soils also limit forage production and species occurrence of both plants and animals. Along Bush Rim, Freighter Gap, and other rims surrounding the basin, vegetation is highly variable and provides the most cover and forage. Small pockets of aspen, willow, and serviceberry are found where snow accumulates. Unique plant species occur on clay outcrops of the Honeycombs, Continental Peak, and along Joe Hay Rim. Wildlife using the rim habitats include elk, deer, porcupine, beaver, golden eagles, red-tailed hawks, ferruginous hawks, prairie falcons, bobcat, sage grouse, and a variety of songbirds.

Aspen provides cover within which deer fawn and find escape from predators and people. The aspen also affords nesting strata for hawks and songbirds. Beaver periodically venture into the basin, where they cut aspen to catch snowmelt. Limber pine occurs on the southeast slope of Steamboat Mountain and Oregon Buttes where flickers, porcupine, Clark's nutcracker, and Wortman's golden-mantled squirrel are found. South-facing slopes containing serviceberry, mountain mahogany, and currants are favored as deer and elk winter range. Deer, elk, and antelope winter in various parts of the basin, although only about 99,540 acres are classed as crucial habitat.

Clay, siltstone, and sandstone outcrops across the basin are used by nesting raptors. Golden eagle, great-horned owl, and prairie falcon prefer the side slopes and cavities, while ferruginous and red-tailed hawks nest atop pinnacles and rocks.

Below the talus slopes, vegetation is predominately sagebrush, greasewood, saltbush, or forb community. These habitats are favored by antelope, prairie dog, jackrabbit, swift fox, badger, and short-horned lizard. Snowy plover, northern shrike, horned lark, and burrowing owl are common residents. An estimated 9,200 acres of occupied white-tailed prairie dog habitat exists here. Two reports of

black-footed ferret sightings have been recorded, one near Brannan Reservoir and the other near Buffalo Hump. No other threatened or endangered wildlife species is known to occur in the area. A variety of game and non-game species inhabit the watershed area. Big game species such as elk, mule deer, and antelope can be found.

Generally speaking, crucial winter range is located along the southern and western perimeters. Seasonal restrictions apply to crucial winter range or calving areas from November 15 through April 30.

Nine known sage grouse leks occur, with 8 leks located on federal lands within the watershed area. Seasonal restrictions apply to strutting grounds and nesting areas between March 15 and July 31.

Raptors can be found throughout the watershed area, although most are concentrated in the Oregon Buttes ACEC and the Honeycomb Buttes WSA. Seasonal restrictions apply to any construction activity during the period from February 1 through July 31 within ½ mile (or line of sight depending upon the topography) of an active nest.

South Pass

The scenic vista of South Pass is among the most important historic landscapes because South Pass served as the primary mountain gateway to the West along the Oregon, Mormon Pioneer, Pony Express, and California National Historic Trails. The pass was the site where emigrant travelers traversed the Continental Divide. South Pass thus marks roughly the halfway point in the epic westward journey. The topographic setting of South Pass facilitated American settlement of the Pacific Northwest, thus solidifying United States sovereignty over that region. South Pass is located on the northwest edge of the Wyoming Basin — a desert-like geographical feature which extends south for 150 miles and forms a complete break in the Rocky Mountain chain.

The site on the pass where several commemorative markers have been placed is already listed on the National Register of Historic Places. In 1959, the National Park Service designated South Pass a National Historic Landmark (NHL). The National Park Service proposed a boundary for the NHL in 1984. The boundary was never finalized by National Park Service or BLM and no management prescriptions have been determined. The proposed boundary included about 5,760 acres of both BLM-administered and private lands in T. 27 N., Rs. 101-102 W.

The area having the most historic value is the viewscape created by the Continental Divide, including the top rim of Pacific Butte on the south and the divide between waters flowing to Pacific Creek and the Sweetwater River on the north and east.

Special Status Plant Species

ACEC designation is being proposed for the locations of four of the candidate plant species (*Arabis pusilla, Astragalus proimanthus, Descurainia torulosa,* and *Thelesperma pubescens*). A description of these species and their habitat requirements can be found in the inclusive Special Status Plant Species-Candidate Plant Species section elsewhere in this chapter.

Steamboat Mountain Area

The Steamboat Mountain area contains approximately 43,270 federal acres of a total 48,330 acres within the described geographic boundaries (Table 3-28). Forming the south end of the general location area are the talus slopes off the base of Steamboat Rim and Steamboat Mountain. Easterly, the area follows the road at the head of Split Rock Canyon northerly along the Continental Divide to the top of the dugway on Bush Rim. Here it follows a two-track trail northwesterly and north to Parnell Creek. The north area follows Parnell Creek downstream to Jack Morrow Creek, and then follows the road all the way to Indian Gap. From Indian Gap, it follows a two track southerly along the base of Steamboat Rim until it meets the existing Sand Dunes ACEC. From here it follows the Sand Dunes ACEC boundary until it reaches the talus slopes at the southern boundary.

The area has highly varied topographic features and ranges in elevation from 7,063 to 8,683 feet. Unique habitats of stabilized sand dunes occur here that are found nowhere else in the district. Tall sagebrush communities (up to 8 feet tall) provide escape cover, shelter, thermal protection, and parturition areas. An understory of bitterbrush and a variety of other shrubs and grasses provide forage. Some of these sagebrush have been estimated to be over 300 years old.

Limber pine and aspen communities provide cover but are limited in size and localities. Other mountain shrub communities such as serviceberry and mountain mahogany provide browse in deep snow conditions. Grass-covered ridgetops offer additional forage for elk during crucial winter periods.

Because of the terrain (steep slopes with dense sagebrush used for elk calving and high ridge tops utilized during the winter), elk use the area year round. Elk are the least tolerant to human disturbance of any of the big game species that inhabit the planning area. Activities tend to displace the elk great distances (to 3 miles) due to the extended sight distances in this desert terrain. Elk tend to abandon the Steamboat area rather than seek shelter in adjacent canyons because of the narrowness of benches and canyons and lack of hiding cover. Loss of crucial elk winter ranges in the Pine and Cedar Canyon areas due to intensive oil and gas development and human intrusion makes the Steamboat area critical to the survival of this elk herd. Intensive development of any kind in the Steamboat area will result in the loss of this elk herd for the life of the activity.

Water is abundant and found in good distribution through springs, ephemeral and perennial streams, seeps, and reservoirs. Snowpack commonly lies along steep slopes in lee areas late into spring. Two supplemental wildlife waters (guzzlers) are found in the area.

The Sands-Steamboat elk herd has fluctuated widely from a high population of about 1,100 in the late 1970s to about 245 in 1979-1980. The Steamboat Herd Unit objective is 500. This herd ranges from just north of Green River to Red Hill (east of Point-of-Rocks) and north to Highway 28 and the Sweetwater River. Roughly one-third of the elk are found in the special management area yearlong.

The Sands-Steamboat elk herd is very important to local Wyoming residents, and is one of the only true desert elk herds in Wyoming. These elk are highly visible and are seen frequently by people driving through the sand dunes, Steamboat Mountain, and the Red Desert areas. Past public meetings held for coalbed methane development in the Steamboat Mountain area brought up concern over this elk herd being displaced from the region.

Historically, from 400 to 700 deer from the Wind River Mountains wintered here. Construction of the Highway 28 fence in about 1979, apparently interrupted winter migration. Less than 250 deer presently winter in this area, although it serves as excellent spring-summer-fall deer range. Most suitable habitats are occupied by deer during these seasons.

Cultural Resource Concerns

Steamboat Mountain is an area in which there are a number of ecotones within a relatively small geographic region. This phenomenon results in a diversity of resources needed by prehistoric peoples being within close proximity of each other. People tended to situate long-term campsites, especially wintering camps, in the Steamboat Mountain area to take advantage of this ecological diversity.

The result of this behavior is a high density of prehistoric sites. Furthermore, the depositional environment in the area, i.e., stable sand sheets and areas of soil formation associated with springs, tend to preserve archeological materials in good stratigraphic context. The area not only has roughly double the average number of sites per section (e.g., 6.5 sites/section), but also the sites tend to be much more significant because they contain strata of occupation covering thousands of years. This situation is particularly evident around Iron Spring (on private land) and the Pine Spring on Steamboat Mountain. Although the entire region has not been studied, it is probable that this pattern holds true for the mountain proper, the stable sand sheet area to the west and south, and the Jack Morrow Hills area to the northeast.

Livestock

The area contains portions of five different allotments (Sands, Fourth of July, Steamboat Mountain, Pacific Creek, and Bush Rim) within its boundaries, with the majority occurring within Pacific Creek and Steamboat Mountain Allotments. The class of livestock is generally cattle, although the Sands allotment has minor sheep use. Season of use ranges from spring until fall.

Minerals

The Steamboat Mountain area is considered high potential for oil and gas development, although under reasonable foreseeable development only 9 wells are likely to occur within the area during the life of this plan. Approximately 11,200 acres of the Steamboat area are located within the coal potential area. Of this total, approximately 9,500 acres are federally owned. Previous coal planning actions were not completed for the area because there was no interest from industry when the original coal screening process was completed in 1981. Current interest and potential for coal development is still low.

Native American Concerns

During hearings for the Triton Coalbed Methane Project, spiritual leaders of the Eastern Shoshone tribe reported several specific features in the Steamboat Mountain region that are of concern to them. The general area contains at least six rock art sites dating from historic times to perhaps 2,000 years ago. Furthermore, artifacts from several archeological sites tested in the region, as well as historical research, indicate that the area likely served as a prehistoric trade center, bringing together several cultural groups. This pattern is reflected both in rock art and in fur trade era artifacts discovered in the area.

The area also has a number of flat-topped mesas and the Boars Tusk volcanic vent formation. At least one of the mesas has several stone circles on it that have been identified as historic vision quest sites. The Shoshone spiritual leaders associate volcanic features like Boars Tusk and North and South Table Mountains with the origins of the Shoshone people.

Recreation

The Steamboat Mountain area provides high value recreational activities. Included are camping, hiking, wildlife viewing, hunting, and picnicking. A backcountry byway (Tri-Territory loop) has also been proposed for this area.

Visual

The present VRM classes encompassing the area include Class II, III, and IV. Rock and cliff formations around Steamboat provide diversity in form, structure, texture, and hue. Aspen groves and conifer stands contrast and enhance the visual aspect. Depth is provided by Steamboat Mountain, numerous deep canyons, and the talus slopes of Steamboat Rim. Diversity is provided through a variety of vegetation communities, springs, seeps, meadows, and both intermittent and ephemeral streams.

Wildlife

The Steamboat Mountain area is of special interest because it provides a favorable environment for the survival of mountain plant species that are not found in the semi-arid plains of the surrounding area. It is one of only a few places where elk populations are found away from a high mountain environment. Surrounding this area is a complex winter range and additional parturition areas (30,000 acres). The area also provides habitat for an abundant population of antelope and mule deer. Two unique species of rodents are found within the Steamboat area. The yellow-bellied marmot, and the Wortman's golden-mantled ground squirrel, inhabit boulder fields in association with limber pine.

In addition to a number of relic plant populations, one candidate plant species, *Lesquerella macrocarpa*, and one state endemic, *Townsendia spathulata*, are found within the Steamboat area. Several springs along the slopes of Steamboat Mountain also provide specialized habitat for a number of additional plant species not normally associated with the semi-arid climate of the Wyoming Basin. A planned cost-share agreement with the Wyoming Natural Diversity Database will provide a specific floristic inventory of the Steamboat area during 1995. This would provide valuable data on the specific candidate plant species locations and occurrences of specialized vegetation communities in the Steamboat vicinity.

White Mountain Petroglyphs ACEC

The White Mountain Petroglyphs ACEC was designated to protect Indian drawings associated with the early ancestors of the present Shoshone tribe and perhaps other tribes. Common drawings include human figures, elk, buffalo, feather head dresses, and human stick figures. The ACEC was officially designated on April 16, 1982 and published in the *Federal Register* on June 30, 1982.

The petroglyphs and immediate area are intensively use by local schools for environmental education field trips. The area below the petroglyph panel, adjacent to the access road, has been degraded by uncontrolled off-road vehicle use. These impacts will begin to reverse themselves if off-road vehicle and foot traffic are channeled by establishing a parking area and access footpath. The surrounding area is also an important deer fawning area and an important raptor nesting area. Scenic viewing of Boars Tusk and the surrounding area is also a popular use. The White Mountain Petroglyphs have received a moderate amount of vandalism over the years, including bullet holes, modern graffiti, and chalk marks within the carvings.

Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90542) to preserve selected rivers in natural, free-flowing conditions. The American Rivers *Outstanding Rivers List* (1988) identified three rivers in the planning area (the

Green River, Henry's Fork, and the Sweetwater River) as possessing some outstanding ecological, recreational, natural, cultural, or scenic value.

The Sweetwater River was also listed in the National Park Service's *Nationwide Inventory* (1982) as being potentially eligible for inclusion in the Wild and Scenic River System. The *Wild and Scenic River Study for the Sweetwater River* (1979) found a 9.5-mile segment of the Sweetwater River from Wilson Bar to Spring Creek (outside of the planning area) ineligible for inclusion in the Wild and Scenic Rivers System based on the 25-mile minimum length criteria. The minimum length criteria has since been eliminated for all rivers.

Seven segments of the Sweetwater River in the planning area have been determined to be potentially suitable for inclusion in the Wild and Scenic Rivers System. Outstandingly remarkable values for the segments include historic, scenic, and recreational resources.

The portion of the Green River administered by the BLM did not meet the suitability criteria based upon the inability of the BLM to manage the area because of lack of jurisdiction. However, it is recommended that a cooperative study between BLM, BOR, and USFWS be conducted to determine eligibility and suitability. Appendix 4-2 lists all rivers and streams examined in the planning area.

The portion of the Henry's Fork administered by the BLM did not meet any of the eligibility criteria for outstandingly remarkable values.

Wind River Front

The Wind River Front is a proposed Special Recreation Management Area. This area is one of the most scenic and predominantly unmodified natural environments on a large scale in the planning area. Because the area is relatively undisturbed, visitors have an opportunity to experience isolation from the sights and sounds of other humans. There are opportunities to have a high degree of interaction with the natural environment, to have moderate challenges and risks, and to use outdoor skills. The recreational activities and opportunities are substantial. Specific recreational activities include fishing, hunting, camping, picnicking, hiking, rock hounding, rock scrambling, snowmobiling, mountain biking, cross country skiing, wildlife viewing, historic trails touring, off-road vehicle and scenic touring, horseback riding, swimming, and photography.

The Wind River Front area includes many recreational and historical resources. BLM-administered campgrounds include the Sweetwater Bridge, Sweetwater Guard Station, Blucher Creek, Squaw Creek, and Dutch Joe. The upper portion of the Sweetwater River is proposed as suitable for inclusion into the National Wild and Scenic River Preservation System. A cross country ski trail is located in the South Pass area. A portion of the Continental Divide Snowmobile Trail is located in the Sweetwater River-Blucher Creek area. A portion of the Continental Divide National Scenic Trail follows the Continental Divide within the area. Portions of the Oregon-Mormon Pioneer-California-Pony Express National Historic trails are located in this area.

The East Fork of the Sweetwater, the Big Sandy River, and Pine Creek are popular fishing, hunting, and camping areas. The Prospects, Little Prospects, Elk Mountain, and the general eastern portion of the area offer outstanding big game hunting opportunities. There is an opportunity to establish a Backcountry Byway along the Lander Road to interpret the diverse resources found along it. The eastern portion of the area is very scenic and is managed as a VRM Class II.

Large acreages of crucial winter range and birthing areas occur within the SRMA for a variety of big game species including moose, elk, deer, and antelope. This area is also used as a migration corridor for elk, deer, and antelope. Several candidate plant species also inhabit this area.

Currently, fluid mineral development potential is moderate to low. However, there is interest and development occurring in portions of the western part of the area. The area has potential for locatable mineral development; however, information about where such development would occur is not available. The greatest potential appears to be in the southeast part of the Wind River Front, although small developments are possible in much of the eastern portion and the Prospect Mountains.

TABLE 3-1
CRITERIA AIR POLLUTANT STANDARDS AND BACKGROUND CONCENTRATIONS FOR THE GREEN RIVER RESOURCE AREA, WYOMING

Pollutant	Averaging Period	Wyoming Standard ($\mu g/m^3$)[1]	National Standard ($\mu g/m^3$)[1]	Background Concentration ($\mu g/m^3$)[1]
TSP	24-hour	150	-	62.5
PM-10	24-hour	150	150	9.6
	Annual	50	50	-
NO_2	Annual	100	100	2
O_3	1-hour	160	235	-
SO_2	3-hour	1,300	-	-
	24-hour	260	365	9
	Annual	60	80	1
CO	1-hour[2]	40,000	40,000	3,500
	8-hour[2]	10,000	10,000	1,500
H_2S	0.5-hour[3]	70	-	-
	0.5-hour[4]	40	-	-

[1] $\mu g/m^3$ - Micrograms per cubic meter.

[2] Not to be exceeded more than once per year.

[3] Not to be exceeded more than twice per year.

[4] Not to be exceeded more than twice in any 5 consecutive days.

TABLE 3-2
AIR POLLUTION INCREMENTS FOR PREVENTION OF SIGNIFICANT DETERIORATION

Pollutant	Averaging Period	Class I	Class II	Class III
PM-10	Annual Geometric	4	17	34
	24-hour	8	30	60
SO_2	Annual Arithmetic	2	20	40
	24-hour	5	91	182
	3-hour	25	512	700
NO_2	Annual Arithmetic	2.5	25	50

TABLE 3-3

FIRE HISTORY
(1980 - 1991)

Year	Number of Fires	Acres Burned
1980	33	312
1981	61	594
1982	44	99
1983	18	66
1984	23	4
1985	43	879
1986	20	19
1987	29	1,134
1988	40	1,000
1989	37	102
1990	34	62
1991	15	101
TOTAL	**397**	**4,372**
AVERAGE/YEAR	**33**	**364**

TABLE 3-4

COMMERCIAL FOREST ACRES BY TIMBER TYPE AND SIZE CLASS

Species	Seed/Saps (<4.9" DBH)	Poletimber (5.0-8.9" DBH)	Sawtimber (9.0+" DBH)	Total
Lodgepole pine	348	3,317	3,207	6,872
Spruce fir	9	232	664	905
Douglas fir			166	166
TOTAL	**357**	**3,549**	**4,037**	**7,943**

TABLE 3-5

COMMERCIAL VOLUME BY SPECIES AND SIZE CLASS

(cubic feet)[1]

Species	Seed/Saps	Poletimber	Sawtimber	Total
Lodgepole pine	194,880	5,124,765	6,513,417	11,833,062
Spruce fir	585	280,256	1,563,720	1,844,561
Douglas fir			294,816	294,816
TOTAL	**195,465**	**5,405,021**	**8,371,953**	**13,972,439**

[1] One cubic foot of wood volume is equal to 4.5 board feet.

TABLE 3-6

COMMERCIAL TIMBER ACRES IN THE VARIOUS TIMBER COMPARTMENTS THAT ARE AFFECTED BY OTHER RESOURCE EVENTS AND/OR VALUES

(by timber compartment)[1]

Areas	Wind River Front	Pine Mountain	Little Mountain	Totals
Crucial Winter Range	1,031	136	269	1,436
Calving Areas	457	1,683	522	2,662
Streams	169	63	9	242
Standing Water	0	5	0	5
Raptors (1/2 mile)	0	5	3	8
Sage Grouse (2 miles)	0	0	14	14
Sage Grouse (1/2 mile)	0	0	0	0
Totals	**1,657**	**1,892**	**817**	**4,367**

[1] The commercial forest stands in the Hickey Mountain-Table Mountain compartment are too small and isolated to be considered a viable part of the commercial forest base and thus are excluded from this table.

TABLE 3-7

TIMBER PRODUCT SALES

(Green River Resource Area)

Item (Permits sold)	1987 Price	Amount
Fuelwood (784 cords)	$7.50	$5,880.00
Posts & Poles (1,350 each)	0.30	405.00
Wildlings (80 each)	3.00	240.00
Item	**1988 Price**	**Amount**
Fuelwood (689 cords)	$7.50	$5,167.50
Posts & Poles (2,356 ea)	0.30	706.80
Posts & Poles (950 ea)	0.40	380.00
Wildlings (55 ea)	3.00	165.00
Christmas Trees (347 ea)	3.00	1,041.00
Item	**1989 Price**	**Amount**
Fuelwood (545 cords)	$7.50	$4,087.50
Posts & Poles (1,525 ea)	0.40	610.00
Wildlings (50 ea)	3.00	150.00
Christmas Trees (368 ea)	5.00	1,840.00
Item	**1990 Price**	**Amount**
Fuelwood (378 cords)	$7.50	$2,835.00
Posts & Poles (580 ea)	0.40	232.00
Wildlings (30 ea)	3.00	90.00
Christmas Trees (200 ea)	5.00	1,000.00

TABLE 3-8

NUMBER OF WELLS BY STATUS AND COUNTY

County	Gas	Oil	Injection	Plugged & Abandoned	Suspended	Total
Fremont	0	0	0	18	2	20
Lincoln	182	8	0	44	0	234
Sublette	132	67	0	157	3	359
Sweetwater	826	439	42	1,076	37	2,420
Uinta	23	12	2	20	2	59
Total	**1,163**	**526**	**44**	**1,315**	**44**	**3,092**

TABLE 3-9

OIL AND GAS DEVELOPMENT POTENTIAL IN SPECIAL MANAGEMENT AREAS

(Federal Surface and Subsurface Acres)

Area	High	Moderate	Low
Cedar Canyon ACEC	2,540	0	0
Currant Creek/Sage Creek	6,660	35,270	35,050
Greater Red Creek Proposed ACEC (includes Red Creek)	27,470	47,500	61,480
Greater Sand Dunes ACEC	34,290	4,710	0
Monument Valley Management Area	69,940	0	0
Natural Corrals ACEC	1,270	0	0
Oregon Buttes ACEC	0	0	3,450
Pine Springs ACEC & Expansion Area	0	0	6,030
Red Creek ACEC	20,810	12,230	26,430
Red Desert Watershed Management Area (large)	559,388	0	86,060
Red Desert Watershed Management Area (modified)	261,550	0	82,090
South Pass Historic Landscape (large)	0	0	90,670
South Pass Historic Landscape Proposed ACEC (viewshed)	0	1,220	55,270
Special Status Plant Species Sites	2,600	100	920
Special Status Plant Species Potential Habitat	7,090	16,890	19,690
Steamboat Mountain Proposed ACEC	44,190	0	0
White Mountain Petroglyphs ACEC	0	20	0
Wind River Front (west)	0	29,350	143,390
Wind River Front (east)	0	0	92,990

TABLE 3-10

OIL AND GAS WELLS DRILLED IN SPECIAL MANAGEMENT AREAS

Area	Producing Gas Wells	Producing Oil Wells	Suspended Wells	Plugged and Abandoned Wells
Cedar Canyon ACEC	9	0	0	8
Currant Creek[1]	0	0	0	2
Greater Sand Dunes ACEC	25	0	0	8
Monument Valley	6	0	0	10
Natural Corrals ACEC	0	0	0	0
Oregon Buttes ACEC	0	0	0	0
Pine Mountain & Sugarloaf Basin	5	0	0	34
Pine Springs ACEC	0	0	0	0
Pine Springs Expansion	0	0	0	0
Red Creek ACEC[1]	0	0	0	9
Red Desert Watershed Area	87	44	8	176
Red Desert (Modified)	11	0	0	57
Sage Creek[1]	0	0	0	5
South Pass Historic Landscape (Alts A, B, C)	0	0	0	8
South Pass Historic Landscape Proposed ACEC (Viewshed)	0	0	0	6
Special Status Plant Locations	0	0	0	0
Steamboat Mountain Proposed ACEC	2	0	0	8
White Mountain Petroglyphs ACEC	0	0	0	0
Wind River Front Special Recreation Management Area	0	0	0	10

[1] Part of the proposed Greater Red Creek ACEC.

TABLE 3-11

OIL AND GAS NONDISCRETIONARY LEASE AREAS BY HYDROCARBON POTENTIAL

(acres)

Category	Surface Ownership (Federal Acres)	Hydrocarbon Potential (Federal Surface and Subsurface Acres)			
		High	Moderate	Low	Total
No Leasing					
Incorporated Cities and Towns (Rock Springs, Green River, and Superior)	3,770	2,700	0	3,090	**5,790**
Seedskadee National Wildlife Refuge[1]	13,360	9,960	4,090	0	**14,050**
WSAs	225,110	134,540	14,310	76,560	**225,410**
Total Nondiscretionary No Leasing	242,240	147,200	18,400	79,650	**245,250**

[1] This RMP will not make decisions for the management of federal minerals on this area.

TABLE 3-12

UNDEVELOPED RECREATION SITES IN THE GRRA

Site	Location	Activity(ies)
Pine Mountain	South of Rock Springs	Camping, hunting
Little Mountain	South of Rock Springs	Camping, hunting
Green River	Running north to south on west side of RA	Camping, hunting, fishing, floating the river
Boars Tusk	North of Rock Springs	Sightseeing
Big Sandy River	North of Rock Springs	Camping, fishing, some floatboating
Steamboat Mountain	North of Rock Springs	Wildlife viewing, hiking, camping
Chicken Springs	On Bush Rim	Huntgin, camping, wildlife viewing
Cedar Canyon	North of Rock Springs	Hiking, cultural viewing
Firehole Basin	South of Rock Springs	Hiking, camping, mountain biking
Continental Divide National Scenic Trail	North and east of Rock Springs	Hiking, camping, wildlife viewing
East Fork Area	Wind River Front	Camping, hiking, fishing

TABLE 3-13
RECREATION USE DAYS

Recreation Activity	Number of Participants[1]	Recreation Days[1]
ORV Travel	8,500	2,292
Other Motorized Travel	10,000	2,083
Non-Motorized Travel	8,000	3,208
Camping	5,000	4,208
Hunting	23,474	54,792
Non-Consumptive Wildlife[2]	—	277,127
Land-Based Sports	7,900	1,375
Fishing	7,500	4,000
Flaming Gorge Activity[3]	—	17,295
Boating	1,800	400
Other Water-Based Sports	1,500	1,542
Winter Sports	1,000	500
Snowmobiling	1,200	2,917
TOTAL RECREATION DAYS		**371,739**

[1] All numbers are based on the BLM Recreation Management Information System (RMIS) Report except hunting numbers, non-consumptive wildlife, and Flaming Gorge activity which are based on Wyoming Game & Fish Annual Harvest Reports and Flaming gorge National Recreation Area recreation data.

[2] Counting every person who visits public lands, recording the purpose of their visit, an the length of time of the visit - is simply impossible. Therefore, the numbers used in this analysis are estimates based on the best available information. Probably the largest "gray area" comprises the categories of sight-seeing, driving for pleasure, other motorized travel, and wildlife watching. These categories overlap to a great extent.

Average daily traffic counts are available from the Wyoming Department of Transportation for the key roads in the Resource Area. However, those figures do not break out resident vs. non-resident or commercial (other than large trucks) vs. commuters vs. travelers from out of the area passing through vs. driving for pleasure. The numbers used here are based on figures published by the Wyoming Game and Fish Department for non-consumptive wildlife for 1990. The 277,127 visitor days were arrived at by taking 5.8 percent of the statewide total as that is the ratio of BLM-administered public lands in the Green River Resource Area to the size of the entire state. Wyoming Game and Fish Department figures do not separate number of participants and recreation days.

[3] Flaming Gorge Reservoir in the Flaming Gorge National Recreation Area is the primary recreation destination in southwest Wyoming. The Wyoming portion of Flaming Gorge is "land-locked" or surrounded by BLM-administered public lands. The numbers used here are derived from recreation data gathered by the Ashley National Forest. The 17,295 visitor days were arrived at by taking 15 percent of the Wyoming portion of visitation on the Recreation Area as the approximate percentage of a day a visitor to the Recreation Area would spend on BLM-administered public lands. Ashley National Forest figures do not separate number of participants and recreation days.

TABLE 3-14

RECREATION OPPORTUNITY SPECTRUM CLASS DESCRIPTIONS

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Primitive	Opportunity for isolation from the sights and sounds of humans, to feel a part of the natural environment, to have a high degree of challenge and risk, and to use outdoor skills.	Area is characterized by essentially unmodified natural environment of fairly large size. Concentration of users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Only facilities essential for resource protection are used. No facilities for comfort or convenience of the user are provided. Spacing of groups is informal and dispersed to minimize contacts between groups. Motorized use within the area is not permitted.	Camping, hiking, climbing, enjoying scenery or natural features, nature study, photography, spelunking, hunting (big game, small game, upland birds, waterfowl), ski touring and snowshoeing, swimming, diving (skin and scuba), fishing, canoeing, sailing, and river running (non-motorized craft).
Semi-Primitive Nonmotorized	Some opportunity for isolation from the sights and sounds of humans, but not as important as for primitive opportunities. Opportunity to have high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills.	Area is characterized by a predominantly unmodified natural environment of moderate to large size. Concentration of users is low, but there is often evidence of other area users. On-site controls and restrictions may be present, but are subtle. Facilities are provided for the protection of resource values and the safety of users only. Spacing of groups may be formalized to disperse use and limit contacts between groups. Motorized use is not permitted.	Camping, hiking, climbing, enjoying scenery or natural features, nature study, photography, spelunking, hunting (big game, small game, upland birds, waterfowl), ski touring and snowshoeing, swimming, diving (skin and scuba), fishing, canoeing, sailing, and river running (non-motorized craft).
Semi-Primitive Motorized	Same opportunity for isolation from the sights and sounds of humans, but not as important as for primitive opportunities. Opportunity to have high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills. Explicit opportunity to use motorized equipment while in the area.	Area is characterized by a predominantly unmodified natural environment of moderate to large size. Concentration of users is low, but there is often evidence of other area users. On-site controls and restrictions may be present, but are subtle. Facilities are provided for the protection of resource values and safety of users only. Spacing of groups may be formalized to disperse use and limit contracts between groups. Motorized use is permitted.	Same as the above, plus the following: ORV use (4-WD, dune buggy, dirt bike, snowmobile, power boating).

TABLE 3-14 (Continued)

RECREATION OPPORTUNITY SPECTRUM CLASS DESCRIPTIONS

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Roaded Natural	About equal opportunities for affiliation with other user groups and for isolation from sights and sounds of humans. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunity are not very important except in specific challenging activities. Practice of outdoor skills may be important. Opportunities for both motorized and nonmotorized recreation are present.	Area is characterized by a generally natural environment with moderate evidence of the sights and sounds of humans. Resource modification and utilization practices are evident, but harmonize with the natural environment. Concentration of users is low to moderate with facilities sometimes provided for group activity. On-site controls and restrictions offer a sense of security. Rustic facilities are provided for user convenience as well as for safety and resource protection. Conventional motorized use is provided for in construction standards and design of facilities.	All activities listed previously plus the following: picnicking, rock collecting, wood gathering, auto touring, downhill skiing, snowplay, ice skating, waterskiing and other water sports, hang gliding, interpretive use, rustic resorts, and organized camps.
Rural	Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. These factors are generally more important than the natural setting. Opportunities for wildland challenges, risk taking, and testing of outdoor skills are unimportant, except in those activities involving challenge and risk.	Area is characterized by substantially modified natural environment. Resource modification and utilization practices are obvious. Sights and sounds of humans are readily evident, and the concentration of users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for specific activities. Developed sites, roads and trails, are designed for moderate to high use. Moderate densities are provided far away from developed sites. Facilities for intensive motorized use are available.	All activities listed previously plus the following competitive games, spectator sports, bicycling, jogging, outdoor concerts, and modern resorts.

TABLE 3-14 (Continued)

RECREATION OPPORTUNITY SPECTRUM CLASS DESCRIPTIONS

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Modern Urban	Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. Experiencing the natural environment, and the use of outdoor skills are largely unimportant.	Area is characterized by a highly modified environment, although the background may have natural elements. Vegetation is often exotic and manicured. Soil may be protected by surfacing. Sights and sounds of humans, on-site, predominate. Large numbers of users can be expected. Modern facilities are provided for the use and convenience of large numbers of people. Controls and restrictions are obvious and numerous. Facilities for high intensity motor use and parking are present with forms of mass transit often available.	All activities listed previously.

TABLE 3-15

CANDIDATE PLANT ACREAGE - ACTUAL AND POTENTIAL HABITAT

		ARPU[1]	ASPR[1]	DETO[1]	THPU[1]	ANAR[2]	ARWI	LEMA	PEAC
Federal Surface/Federal Minerals	Actual Habitat	500	220	5	170	40	10	2,650	10
	Potential Habitat	400	4,870	1,280	23,780		330	4,970	630
Federal Surface/State Minerals	Actual Habitat	0	0	0	0	0	0	0	0
	Potential Habitat	0	0	0	0		0	0	0
Federal Surface/Private Minerals	Actual Habitat	0	0	0	0	0	0	0	0
	Potential Habitat	0	0	0	0		0	0	0
State Surface/Federal Minerals	Actual Habitat	0	0	0	0	0	0	0	0
	Potential Habitat	0	0	0	0		0	0	0
State Surface/State Minerals	Actual Habitat	0	15	0	15	0	0	300	0
	Potential Habitat	0	610	0	1,270		0	630	0
State Surface/Private Minerals	Actual Habitat	0	0	0	0	0	0	0	0
	Potential Habitat	0	0	0	0		0	0	0
Private Surface/Federal Minerals	Actual Habitat	0	5	0	5	0	0	0	0
	Potential Habitat	0	1,120	0	2,570		90	0	0
Private Surface/Private Minerals	Actual Habitat	0	0	5	0	5	0	0	0
	Potential Habitat	0	830	1,280	310		160	40	0
TOTAL FEDERAL SURFACE	Actual Habitat	500	220	5	170	40	10	2,650	10
	Potential Habitat	400	4,870	1,280	23,780		330	4,970	630
TOTAL STATE SURFACE	Actual Habitat	0	15	0	15	0	0	300	0
	Potential Habitat	0	610	0	1,270		0	630	0
TOTAL PRIVATE SURFACE	Actual Habitat	0	5	5	5	5	0	0	0
	Potential Habitat	0	1,950	1,280	2,880		250	40	0
TOTAL ACRES	**Actual Habitat**	**500**	**245**	**10**	**190**	**45**	**10**	**2,950**	**10**
	Potential Habitat	**400**	**7,430**	**2,560**	**27,930**		**580**	**5,640**	**630**

ABBREVIATIONS: ARPU = *Arabis pusilla*; ASPR = *Astragalus proimanthus*; DETO = *Descurainia torulosa*; THPU = *Thelesperma pubescens*; ANAR = *Antennaria arcuata*; ARWI = *Arabis williamsii*; LEMA = *Lesquerella macrocarpa*; PEAC = *Penstemon acaulis*.

[1] Recommended for ACEC.

[2] No potential habitat defined.

Artemisia biennis var. *diffusa*; *Cirsium ownbeyi*, *Oryzopsis contracta*; *Oryzopsis swallenii*; *Physaria condensata*; *Thelesperma caespitosm*; *Townsendia microcephala* together occupy less than 40 acres and are not shown in detail on this table.

TABLE 3-16

CANDIDATE PLANT SPECIES IN THE GREEN RIVER RESOURCE AREA

Plant Name		Classification	
Scientific	Common	Federal	Conservancy[1]
Antennaria arcuata	meadow pussytoes	2	G2S2
Arabis pusilla	small rockcress	1	G1S1
Arabis williamsii	William's rockcress	2	G3S3
Artemisia biennis var. *diffusa*	diffuse sagebrush	2	G5T1/S1
Astragalus proimanthus	precocious milkvetch	2	G1S1
Cirsium ownbeyi	Ownbey's thistle	2	G3S1
Descurainia torulosa	mountain tansymustard	2	G1S1
Lesquerella macrocarpa	large fruited bladderpod	3C	G2S2
Oryzopsis contracta	contracted ricegrass	2	G3S3
Oryzopsis swallenii	Swallen's mountain ricegrass	3C	G5S1
Penstemon acaulis	stemless beardtongue	3C	G2S1
Physaria condensata	tufted twinpod	3C	G2S2
Thelesperma pubescens	Uinta greenthread	2	G1S1
Thelesperma caespitosum	none	none	G1S1
Townsendia microcephala	Cedar Mountain Easter daisy	2	G1S1

[1] The ranking system used by Nature Conservancy, Natural Diversity Data Base for plant sensitivity is on a global and a statewide basis. Sensitivity is determined by the vulnerability of the species to extinction globally or extirpation statewide, based on threats to the population.

Global ranking

G1-extremely vulnerable to extinction globally
G2-very vulnerable to extinction globally
G3-vulnerable to extinction globally
G4-apparently secure globally
G5-secure globally

Statewide ranking

S1-extremely vulnerable to extirpation statewide
S2-very vulnerable to extirpation statewide
S3-vulnerable to extirpation statewide
S4-apparently secure statewide
S5-secure statewide

Trinomial ranking

T1-this subspecies or variety extremely rare and vulnerable to extinction
T2-this subspecies or variety rare, vulnerable to exttibncition
T3-this subspeices or variety rare, local, or restricted in its range.

Sources:

The Nature Conservancy 1990. Natural Diversity Data Base Ranking System.

Federal Register, September 30, 1993, and the Wyoming Natural Diversity Database 1993, "Wyoming Plant Species of Special Concern."

TABLE 3-17

LANDSAT CLASSIFICATION ACREAGE AND ASSOCIATED COMMUNITIES

LANDSAT Class	Communities	Acreage[1]
Sagebrush (high density)	Wyoming big sagebrush Mountain big sagebrush Mountain shrub Meadow Open Cover Aspen	683,600
Sagebrush (low density)	Wyoming big sagebrush Low sagebrush Desert shrub Grassland	3,619,700
Saltbush	Saltbush Half shrub	315,600
Greasewood	Greasewood	261,500
Aspen	Aspen Aspen/Sagebrush	18,400
Riparian	Meadow Willow Cottonwood Greasewood Sagebrush	18,200
Conifer	Conifer	8,000
Juniper	Juniper	109,500
Barren	Barren	226,800
Sand Dune	Sand Dune	17,800
Agriculture	Agriculture	45,500
Water	None	28,400
TOTAL ACRES		**5,353,000**

[1] All figures are rounded.

TABLE 3-18
HIGHEST LEVELS OF SALINITY IN THE GRRA

Stream	TDS Range (mg/l)
Jack Morrow Creek	500 - 8,000
Pacific Creek	1,000 - 2,000
Salt Wells Creek	2,000 - 7,000
No Name Creek	1,000 - 9,000
Bitter Creek	1,000 - 9,000+
Little Bitter Creek	3,000 - 8,000

TABLE 3-19
GROUNDWATER OCCURRENCE

Geologic Subdivision	Groundwater Occurrence	Total Dissolved Solids (mg/l)
Bishop	possibilities fair	150 - 300
Bridger	possibilities poor; yields less than 50 gpm	563 - 914
Laney Shale	possibilities fair; up to 75 gpm	650 - 4,200
Wilkins Peak	possibilities poor; less than 30 gpm	1,690 - 8,000
Tipton Shale	possibilities good; yields 10 - 170 gpm	1,330 and up
Wasatch Formation	possibilities good; yields 1 - 668 gpm	200 - 3,700

TABLE 3-20
UNDERGROUND WATER CLASS

Use Suitability Constituent or Parameter	I Domestic Concentration[1]	II Agriculture Concentration[1]	III Livestock Concentration[1]
Aluminum (Al)	—	5.0	5.0
Ammonia (NH_3-N)	0.5	—	—
Arsenic (As)	0.05	0.1	0.2
Barium (Ba)	1.0	—	—
Beryllium (Be)	—	0.1	—
Boron (B)	0.75	0.75	5.0
Cadmium (Cd)	0.01	0.01	0.05
Chloride (Cl)	250.0	100.0	2,000.0
Chromium (Cr)	0.05	0.1	0.05
Cobalt (Co)	—	0.05	1.0
Copper (Cu)	1.0	0.2	0.5
Cyanide (CN)	0.2	—	—
Fluoride (F)	1.4-2.4	—	—
Hydrogen Sulfide (H_2S)	0.05	—	—
Iron (Fe)	0.3	5.0	—
Lead (Pb)	0.05	5.0	0.1
Lithium (Li)	—	2.5	—
Manganese (Mn)	0.05	0.2	—
Mercury (Hg)	0.002	—	0.00005
Nickel (Ni)	—	0.2	—
Nitrate (NO_3-N)	10.0	—	—
Nitrite (NO_2-N)	1.0	—	10.0
Nitrite (NO_3+NO_2)-N	—	—	100.0
Oil & Grease	Virtually free	10.0	10.0
Phenol	0.001	—	—
Selenium (Se)	0.01	0.02	0.05
Silver (Ag)	0.05	—	—
Sulfate (SO_4)	250.0	200.0	3,000.0
Total Dissolved Solids	500.0	2,000.0	5,000.0
Uranium (U)	5.0	5.0	5.0
Vanadium (V)	—	0.1	0.1
Zinc (Zn)	5.0	2.0	25.0
pH[2]	6.5-9.0 s.u.	4.5-9.0 s.u.	6.5-8.5 s.u.
SAR	—	8	—
RSC[3]	—	1.25 meq/l	—
Combined Total Radium 226 and Radium 228[4]	5 pCi/l	5 pCi/l	5 pCi/l

TABLE 3-20 (Continued)
UNDERGROUND WATER CLASS

Use Suitability Constituent or Parameter	I Domestic Concentration[1]	II Agriculture Concentration[1]	III Livestock Concentration[1]
Total Strontium 90[4]	8 pCi/l	8 pCi/l	8 pCi/l
Gross alpha particle radioactivity (including Radium 226 but excluding Radon and Uranium)[4]	15 pCi/l	15 pCi/l	15 pCi/l

[1] mg/l, unless otherwise indicated

[2] measured in standard units (s.u.)

[3] meq/l = milliequivalents per liter

[4] pCi/l = picoCuries per liter

Source: State of Wyoming, Department of Environmental Quality. "Water Quality Rules and Regulations, Chapter VIII."

NOTES: Milligrams Per Liter, abbreviated mg/l, means milligrams of solute per liter of solution — equivalent to parts per million assuming unit density of water.

Standard Unit, abbreviated s.u., is the unit of measurement used to describe the numerical pH of a solution, fluid, or pollutant.

Milliequivalents Per Liter, abbreviated meq/l, used to report the Residual Sodium Carbonate concentration in water used for irrigation, is defined as 0.001 of the equivalent weight of the ion per liter volume.

PicoCuries Per Liter, abbreviated pCi/l, is a measure of radioactivity of waters or fluids. A picoCurie is equal to 10^{-12} curie; a curie is defined as 3.7×10^{10} disintegrations per second.

pH is a term to express the intensity of the acid or basic condition. A pH value of 7.0 at 25 degrees Centigrade is neutral, with pHs of less than 7.0 progressively more acid and pHs of greater than 7.0 progressively more basic.

Residual Sodium Carbonate, abbreviated RSC, is defined as twice the concentration of carbonate or bicarbonate a water would contain after subtracting an amount equivalent to the calcium plus the magnesium, and is a measure of potential hazard which exists when waters high in carbonate and bicarbonate and relatively low in calcium and magnesium are used for irrigation.

Sodium Adsorption Ratio, abbreviated SAR, of a water is defined by the U.S. Department of Agriculture Laboratory (1954) as:

$$SAR = \frac{(Na+)}{\sqrt{\frac{(Ca^{+2}) + (Mg^{+2})}{2}}}$$

where ion concentrations are expressed in milliequivalents per liter. The SAR predicts reasonably well the degree to which irrigation water tends to enter into cation-exchange reactions in soil.

Total Dissolved Solids, abbreviated TDS, is the sum of the dissolved mineral constituents in water, expressed as mg/l.

The Rock Springs District does not routinely test for all parameters listed in the DEQ guidelines. The choice of test parameters is based upon known potential hazards and information needed for ongoing studies and monitoring.

TABLE 3-21

WILD HORSE POPULATIONS

(As of February of Each Year)

Management Area	Year																				
	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
Inside Wild Horse Herd Management Areas																					
Divide Basin	1166	N	1541	1930	2181	1311	2262	2188	2227	2171	2485	1767	1346	1040	512	660	612	586	537	626	475
White Mountain	264	O	266	443	618	599	497	498	606	237	236	283	158	176	246	231	211	301	340	242	273
Salt Wells Cr.	268	D	360	408	572	1498	702	764	696	644	307	374	487	334	335	430	419	504	699	614	623
Adobe Town	387	A	718	410	1076	683	508	879	760	1086	655	944	1093	513	254	278	430	85	162	186	297
Figure 4	------ No Data				299	94	116	54	91	0	0	4	34	7	0	0	0	0	0	0	0
Outside Wild Horse Herd Management Areas																					
Area South of Figure 4, North of White Mtn.	---------- No Data ----------					663	416	574	502	209	258	261	312	146	115	88	70	82	81	102	120
West of Divide Basin, North of I-80	--------- No Data ---------						326	352	442	452	152	127	107	133	54	0	0	88	137	75	71
West of Salt Wells Creek, South of I-80			15		20		32	11	74	86	52	28	59	44	106	47	33	18	56	26	16

TABLE 3-22
WILDERNESS STUDY AREAS

Wilderness Study Area	Public Land Acres in WSA	Public Land Acres Recommended as Suitable
Buffalo Hump	10,300	6,080
Sand Dunes	27,109	21,304
Alkali Draw	16,990	0
South Pinnacles	10,800	0
Alkali Basin-East Sand Dunes	12,800	0
Red Lake	9,515	0
Honeycomb Buttes	41,404	37,287
Oregon Buttes	5,700	5,700
Whitehorse Creek	4,002	0
Devils Playground-Twin Buttes	23,841	23,841
Red Creek Badlands	8,020	0
Adobe Town[1]	53,000	4,480
TOTAL	**223,481**	**98,692**

[1] Acres within Green River planning area only.

TABLE 3-23
BIG GAME POPULATION STATUS
(1992)

Species	Herd Unit	Objective Population	1992 Population	1992 Harvest
Antelope	Bitter Creek	11,000	22,000	4,122
	Red Desert	12,000	12,800	2,499
	South Rock Springs	4,000	4,984	1,074
	Sublette	30,000	32,811	6,280
	Uinta-Cedar Mountain	7,000	9,718	1,741
	West Green River	3,000	10,731	2,677
Elk	Pinedale	1,900	2,300	432
	Piney	2,424	3,250	793
	South Rock Springs	600	1,000	295
	South Wind River	3,300	3,489	535
	Steamboat	500	552	108
	Uinta-Cedar Mountain	600	1,000	307
	Upper Green River	2,500	2,700	543
	West Green River	3,100	3,400	1,191
Moose	Lander	450	377	37
	Lincoln	1,500	1,190	114
	Sublette	5,500	5,704	567
	Uinta-Cedar Mountain	600	892	39
Mule Deer	Baggs	18,700	20,787	2,890
	Hall Creek[1]	5,600	4,872	1,067
	South Rock Springs	11,750	7,500	334
	Steamboat	4,000	3,219	478
	Sublette	32,000	32,618	6,106
	Uinta-Cedar Mountain	7,000	15,596	3,692
	Wyoming Range	38,000	34,271	8,487

[1] Now part of the South Wind River herd.

TABLE 3-24

STREAMS WITHIN THE RESOURCE AREA HAVING SENSITIVE FISH

Stream	Fish
Big Sandy River	Roundtail Chub Bluehead Sucker
Little Sandy River	Colorado River Cutthroat Trout
Green River	Roundtail Chub Bluehead Sucker
Blacks Fork River	Bluehead Sucker
Currant Creek	Colorado River Cutthroat Trout
Red Creek (upper reaches)	Colorado River Cutthroat Trout
Trout Creek	Colorado River Cutthroat Trout
Sculpin Creek	Colorado River Cutthroat Trout

TABLE 3-25

STREAM CHANNEL STABILITY RATING

Class	Miles
1	0
2	35.4
3	102.28
4	330.18
5	112.86
Rated	580.72
Not Rated	1,017.24
Grand Total	1,597.96

TABLE 3-26
RIPARIAN AREA CONDITION RATING

		Functioning At Risk			
	PFC	Trend Up	Trend Not Apparent	Trend Down	Non-Functioning
Miles of Streams With Management Objectives	23.0	3.0	13.45	13.45	0.3
Miles of Streams Without Management Objectives	1.5	2.4	9.15	18.2	2.0

TABLE 3-27
BLM-ADMINISTERED PUBLIC LANDS IN EXISTING ACECS

	Cedar Canyon	Greater Sand Dunes	Natural Corrals	Oregon Buttes	Pine Springs	Red Creek	White Mountain
Federal Surface/Federal Minerals	1,910	38,010	1,116	3,450	90	55,560	20
Federal Surface/State Minerals	640	640	0	0	0	320	0
Federal Surface/Private Minerals	0	0	0	0	0	0	0
TOTAL FEDERAL SURFACE	**2,550**	**38,650**	**1,116**	**3,450**	**90**	**55,880**	**20**

TABLE 3-28

OWNERSHIP WITHIN GENERAL LOCATIONS OF BLM-ADMINISTERED SPECIAL OR OTHER MANAGEMENT AREAS

(as identified in one or more alternatives)

Ownership	Greater Red Creek (Alt C)	Greater Red Creek Proposed ACEC (Proposed) Plan)	Monument Valley Management Area	Pine Mountain Management Area	Pine Springs ACEC & Proposed Expansion Area	Red Desert Watershed Area (Alts. A, B)	Red Desert Watershed Management Area (Proposed Plan)	South Pass Historic Landscape (large) (Alts. A, B,) C)	South Pass Historic Landscape Proposed ACEC (viewshed)	Special Status Plant Species (Alt. C)	Special Status Plant Species Proposed ACEC (Proposed Plan)	Steamboat Mountain Proposed ACEC	Sugarloaf Basin Management Area	Wind River Front Special Recreation Management Area
Federal Surface/ Federal Minerals	277,160	130,370	64,740	61,870	5,390	462,690	336,980	86,800	53,320	31,220	900	43,270	85,010	260,800
Federal Surface/ State Minerals	4,720	1,520	5,200	640	640	19,240	4,080	740	460	0	0	0	2,560	280
Federal Surface/ Private Minerals	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State Surface/ Federal Minerals	840	230	0	540	0	1,400	1,400	0	250	0	0	0	0	1,030
State Surface/ State Minerals	26,930	16,400	630	6,790	0	16,950	16,030	2,890	3,320	1,910	30	2,810	3,750	26,070
State Surface/ Private Minerals	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Private Surface/ Federal Minerals	5,890	4,110	0	1,150	0	1,600	1,280	3,040	2,440	3,700	6	920	640	5,640
Private Surface/ Private Minerals	25,630	22,750	21,720	1,270	0	143,690	670	490	3,690	2,420	4	1,330	1,610	20,620
TOTAL FEDERAL SURFACE	**281,880**	**131,890**	**69,940**	**62,510**	**6,030**	**481,930**	**341,060**	**87,540**	**53,780**	**31,220**	**900**	**43,270**	**87,570**	**261,080**
TOTAL STATE SURFACE	**27,770**	**16,630**	**630**	**7,330**	**0**	**18,350**	**17,430**	**2,890**	**3,570**	**1,910**	**30**	**2,810**	**3,750**	**27,100**
TOTAL PRIVATE SURFACE	**31,520**	**26,860**	**21,720**	**2,420**	**0**	**145,290**	**1,950**	**3,530**	**6,130**	**6,120**	**10**	**2,250**	**2,250**	**26,260**
TOTAL SURFACE ACREAGE	**341,170**	**175,380**	**92,290**	**72,260**	**6,030**	**645,570**	**360,440**	**93,960**	**63,480**	**39,250**	**940**	**48,330**	**93,570**	**314,440**

TABLE 3-29

ACTIVE RAPTOR NESTS IN THE CEDAR CANYON ACEC

Prairie falcon	10
Golden eagle	6
Ferruginious hawk	3
Red-tailed hawk	4
Great horned owl	1
Total nests	**24**

TABLE 3-30

BIG GAME CRUCIAL WINTER RANGE IN THE GREATER RED CREEK AREA

Species	Total Acres	Percentage of Area
Antelope	74,565	21.0
Deer	211,480	59.6
Elk	101,146	28.5

TABLE 3-31

RAPTOR SPECIES NEST COUNT

Species	Number of Nests	Percent
American Kestrel	1	1.1
Ferruginous Hawk	2	2.2
Golden Eagle	30	33.0
Great Horned Owl	2	2.2
Marsh Hawk	2	2.2
Prairie Falcon	27	29.6
Red-tailed Hawk	26	28.6
Sharp-shinned Hawk	1	1.1
TOTAL	**9**	**100.00**

TABLE 3-32
POTENTIAL FOR DEVELOPMENT OF OIL AND GAS
(acres)

	Fed. Surface/ Fed. Minerals	Fed. Surface/ State Minerals	State Surface/ Fed. Minerals	Private Surface/ Fed. Minerals
High	382,946	17,564	765	1,540
Low	79,706	1,677	639	64

Map 59

Climatological Stations in Southwestern Wyoming

Green River Planning Area



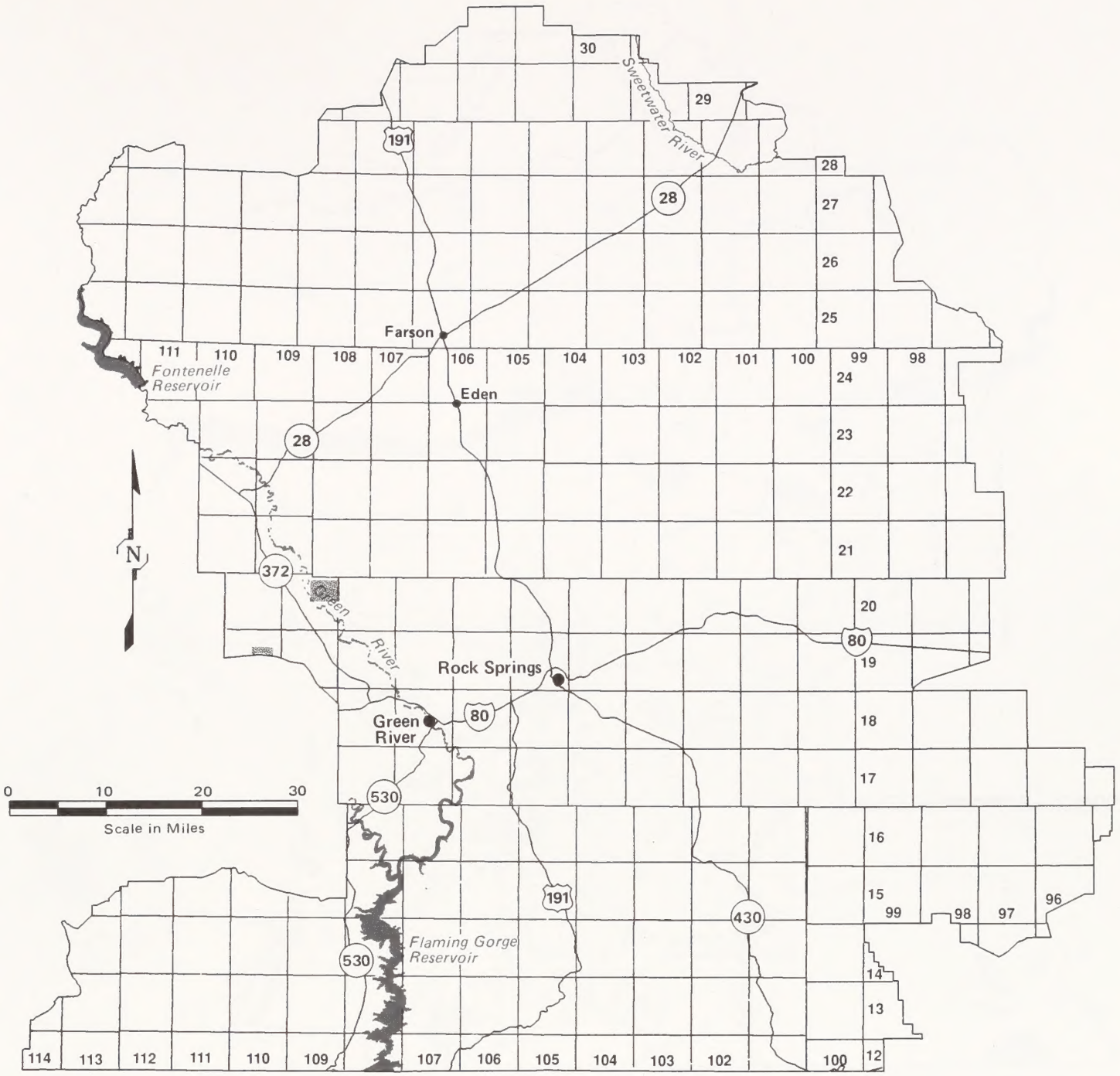


Contour Interval 200 Meters

Map 60

Elevation Contours

Green River Planning Area



Annual Total Suspended Particulates
Non-Attainment Area

Map 61

Annual TSP Non-Attainment Areas

Green River Planning Area



Windblown Sand

Landslide Area

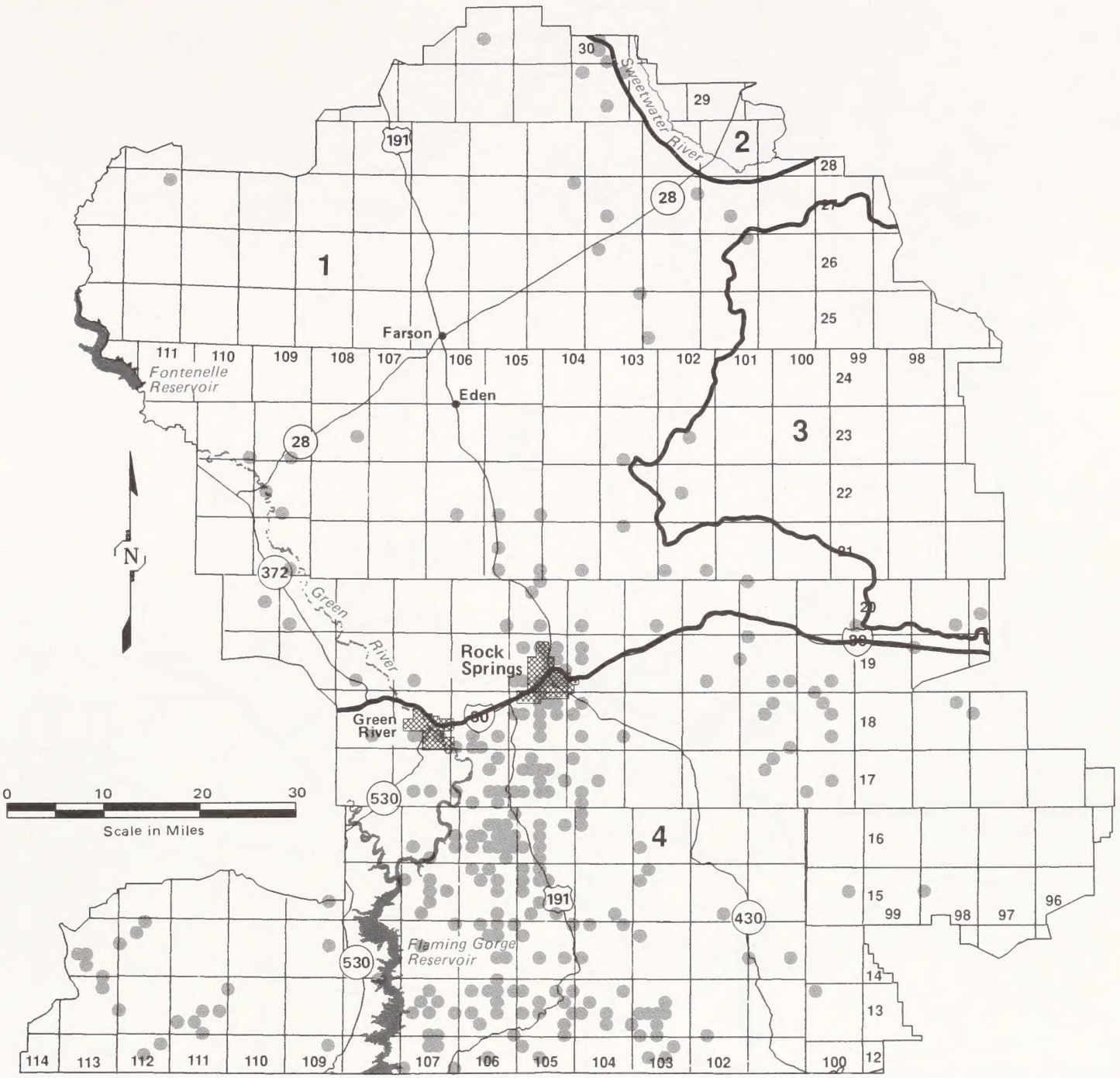
Potentially Active Faults

H_2S Well

Map 62

Geologic Hazards

Green River Planning Area



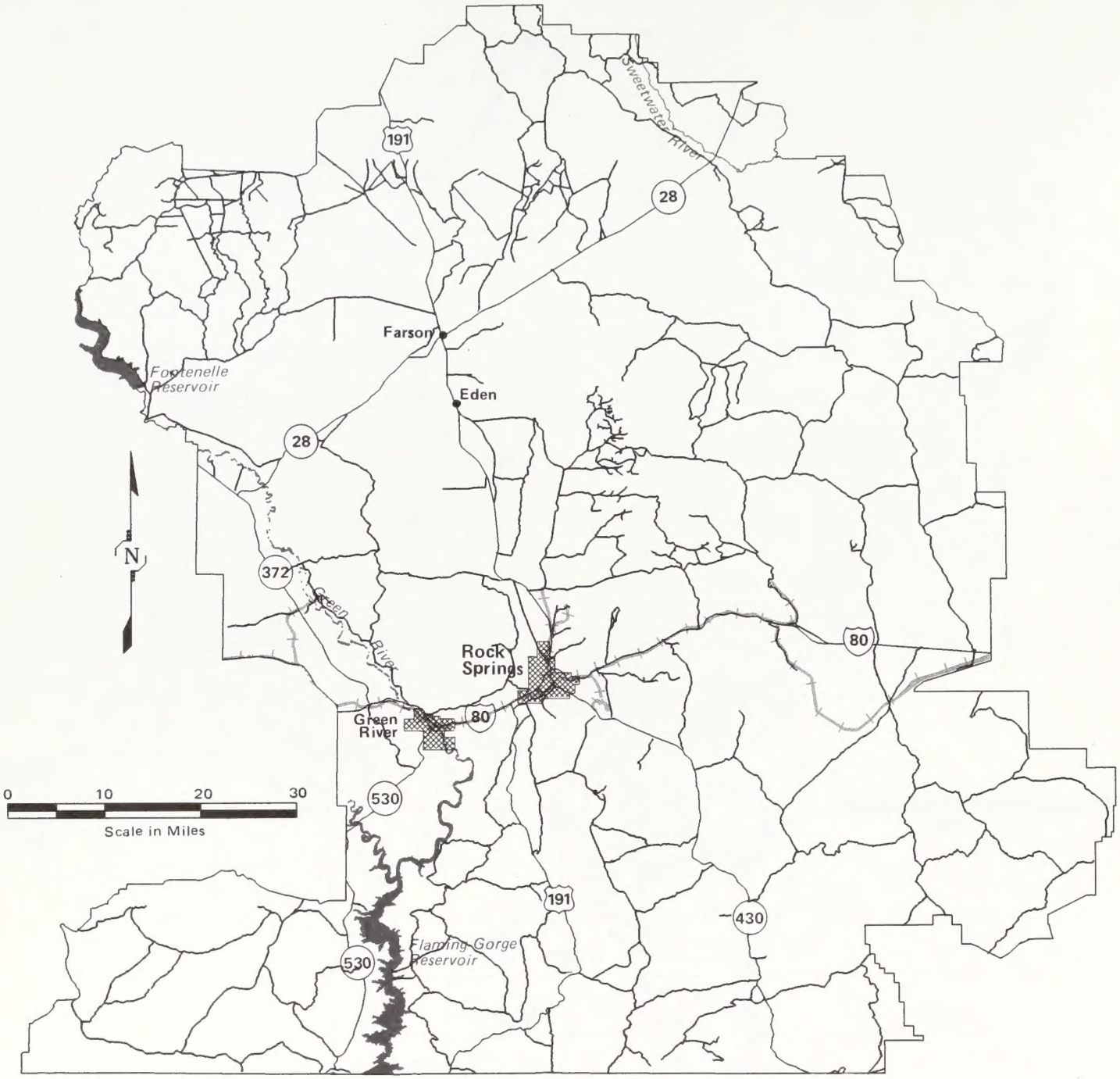
● Wildfire Occurence (1980-1989)

4 Fire Management Area

Map 63

Fire Management

Green River Planning Area



Roads

Railroads

Map 64

Transportation

Green River Planning Area



Existing Fence

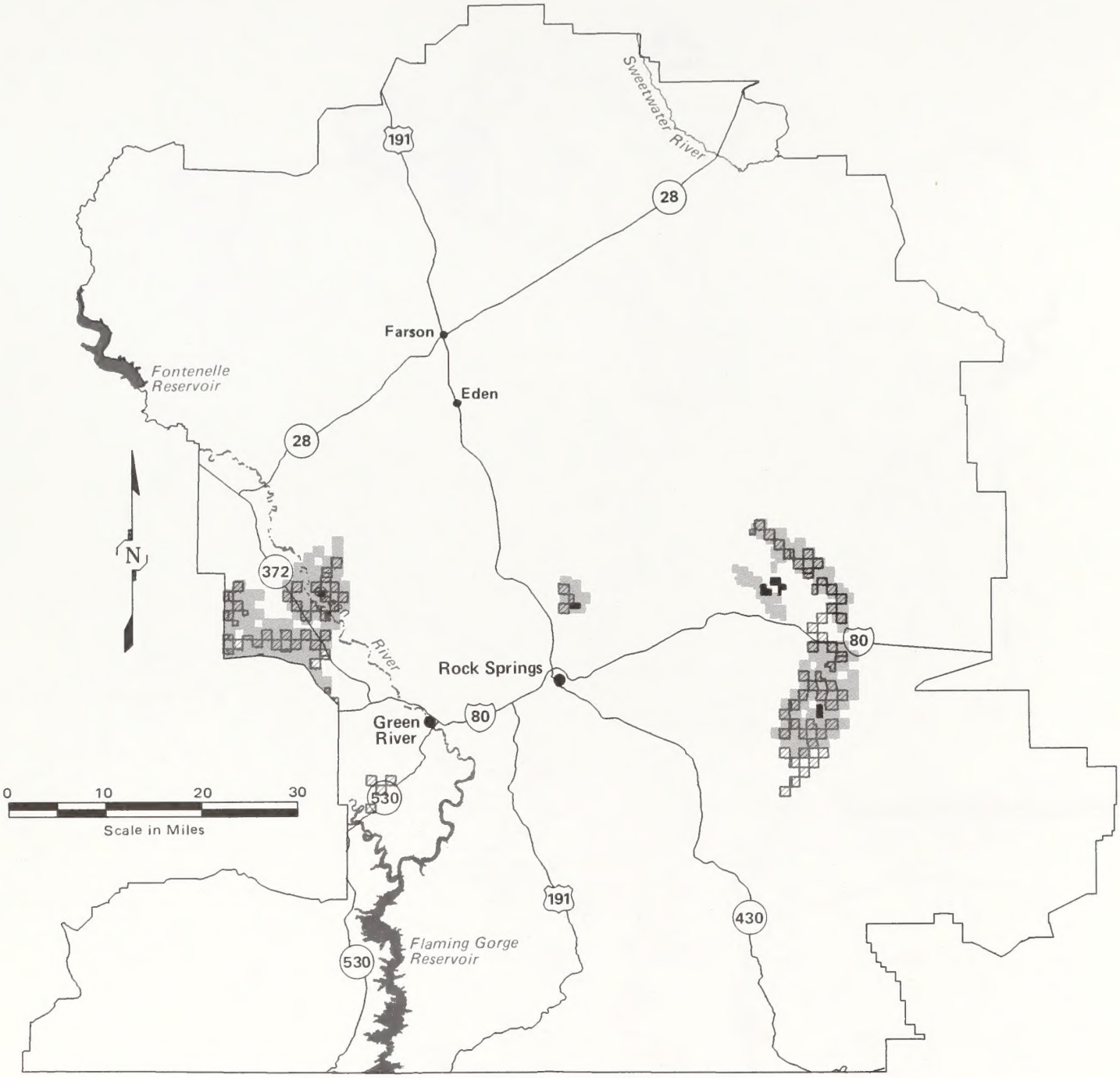
Proposed Fence

Fence Reconstruction and/or Modification

Map 65

Existing and Proposed Fences

Green River Planning Area



Permit Area

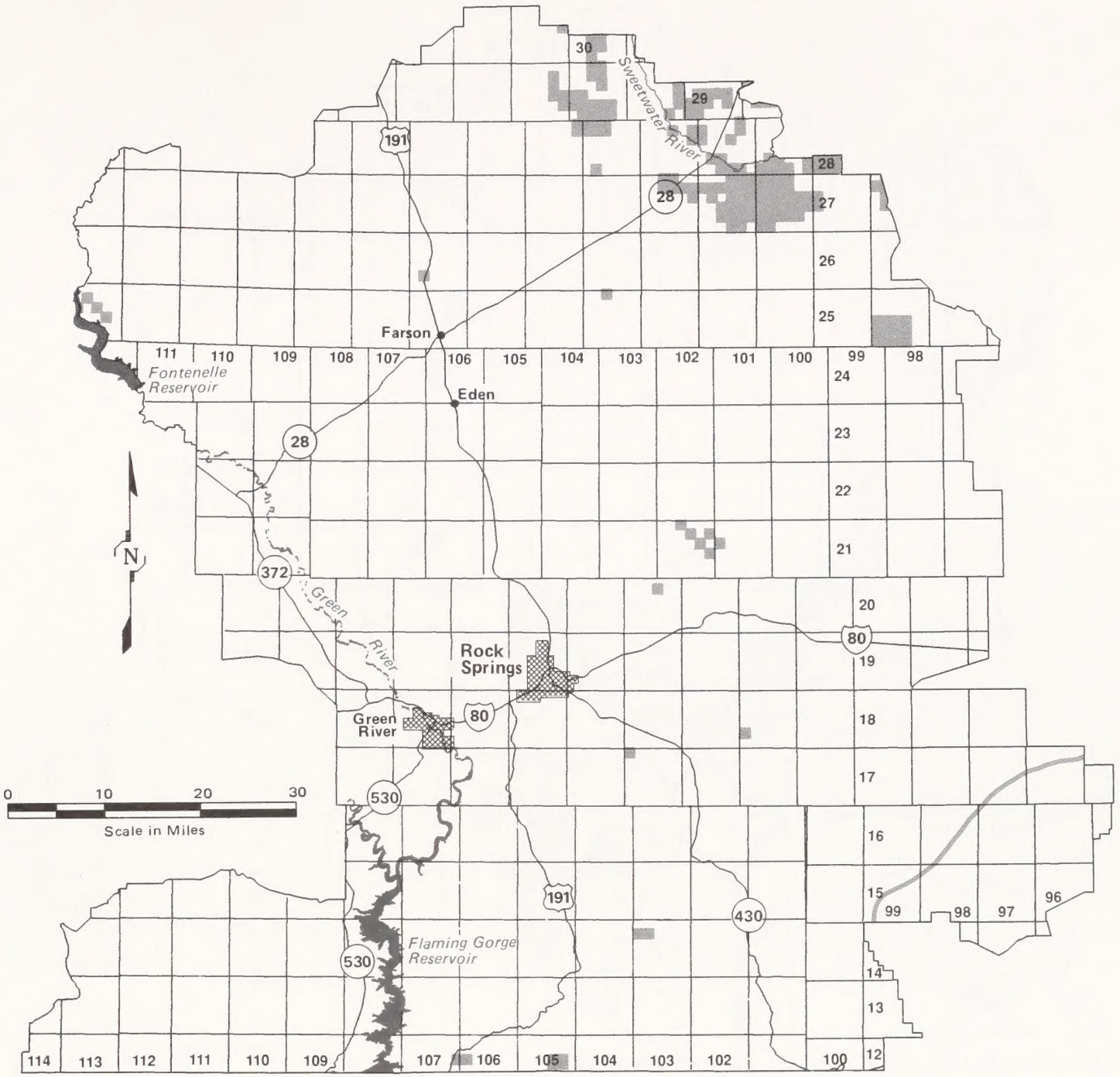
Mine Site

Lease Area

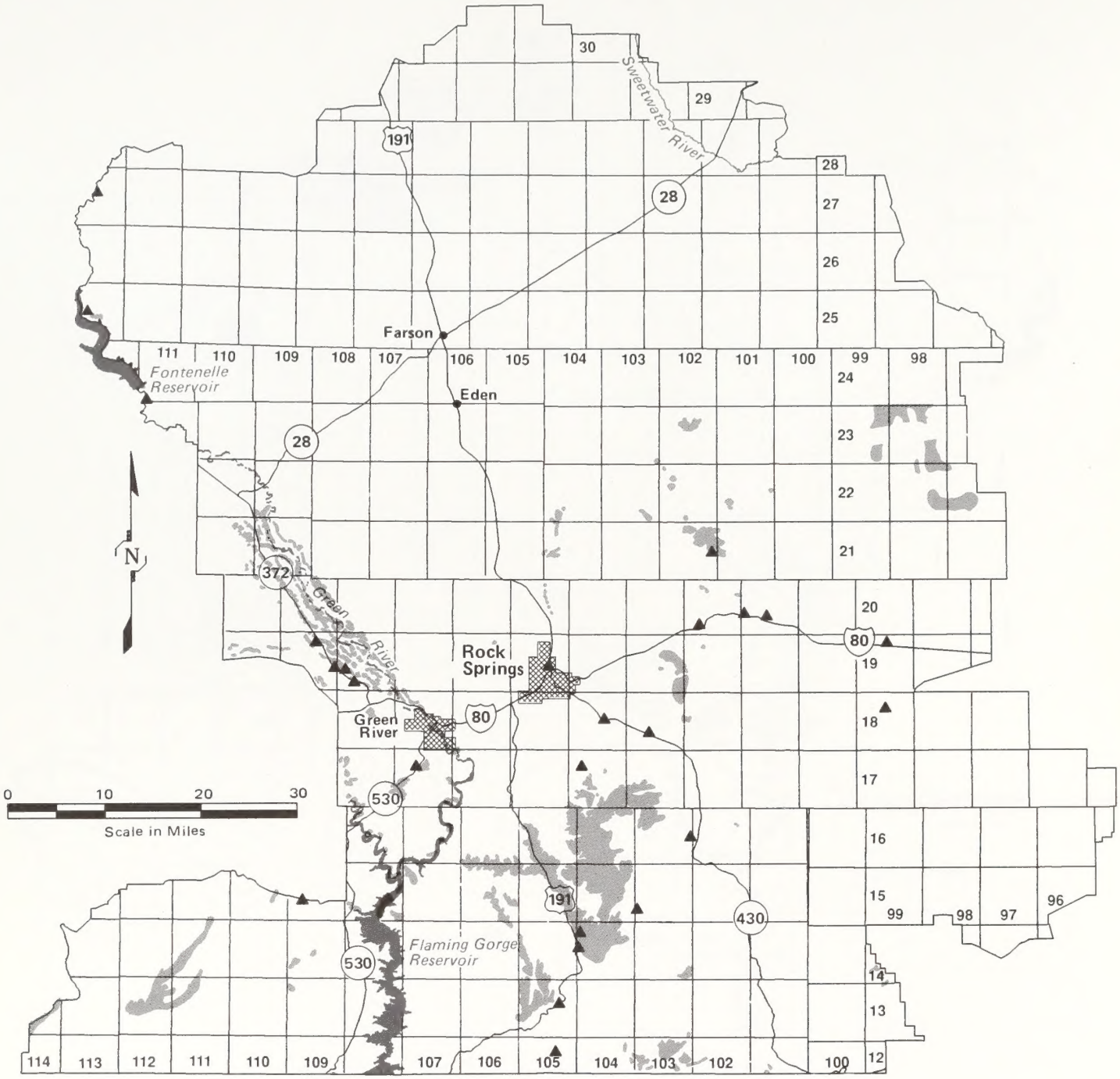
Map 66

Existing Coal and Sodium Mines, Lease Areas, and Permit Areas

Green River Planning Area



Map 67
Locatable Mineral Development Potential Areas
Green River Planning Area



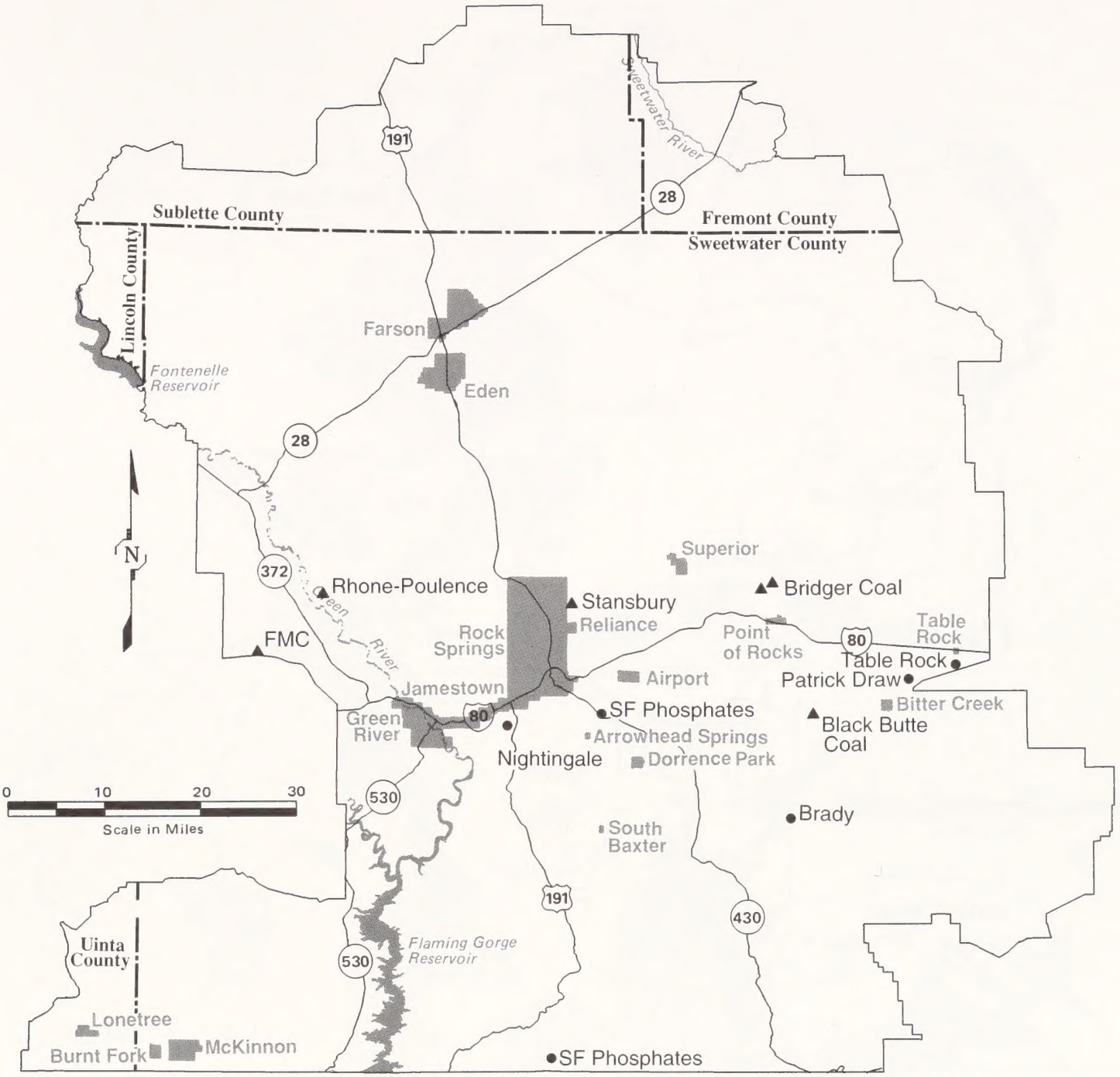
Sand and Gravel Potential

▲ Sand and Gravel Site

Map 68

Sand and Gravel

Green River Planning Area



City, Town, or Outlying Area

● Industrial Plant

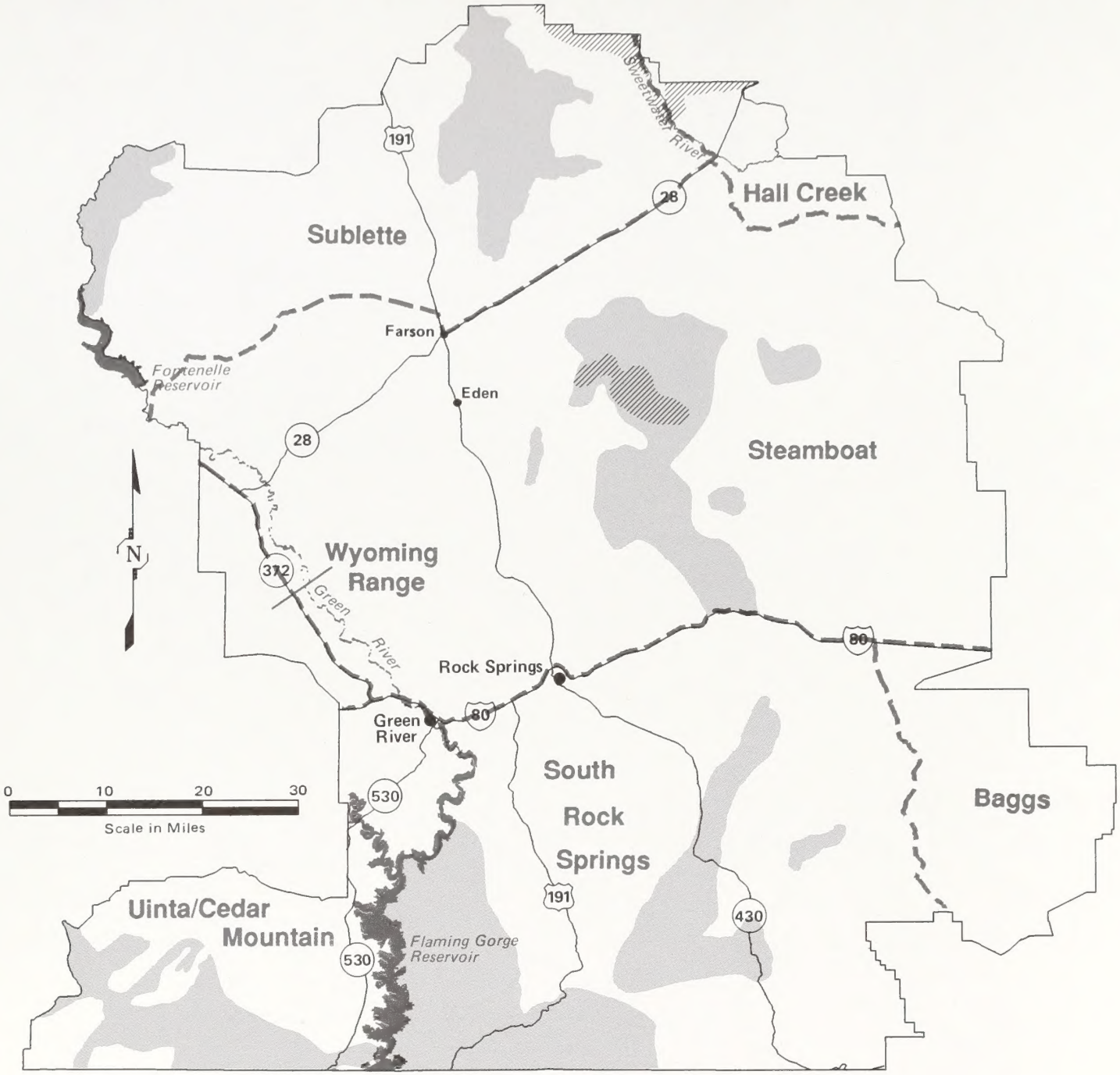
▲ Mine Site

—·— County Line

Map 69

Cities, Towns, Mine Sites, Counties, and Industrial Plants

Green River Planning Area



Crucial Winter/Winter Yearlong Range

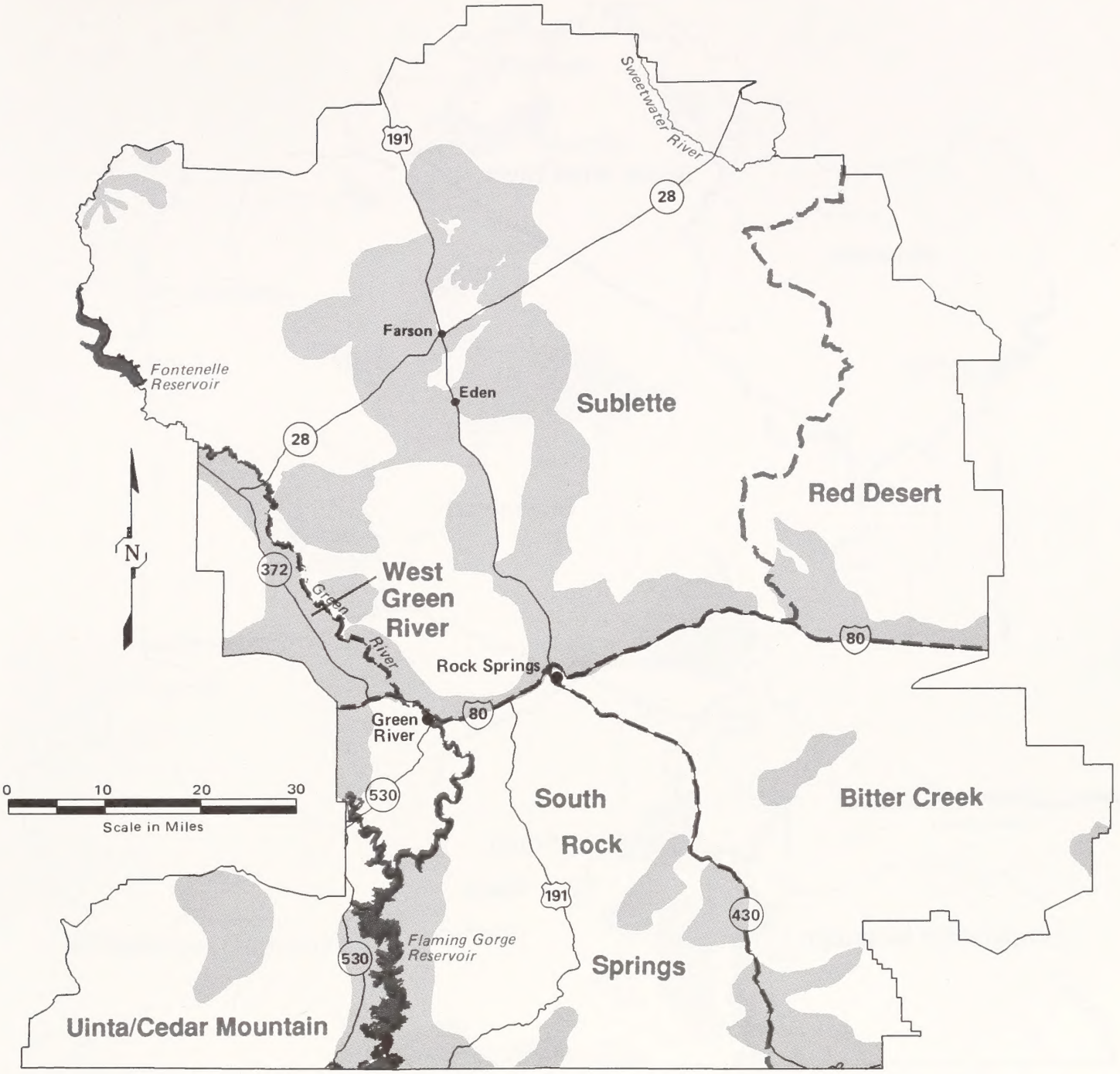
Birthing Area

Herd Unit

Map 70

Mule Deer Habitat

Green River Planning Area



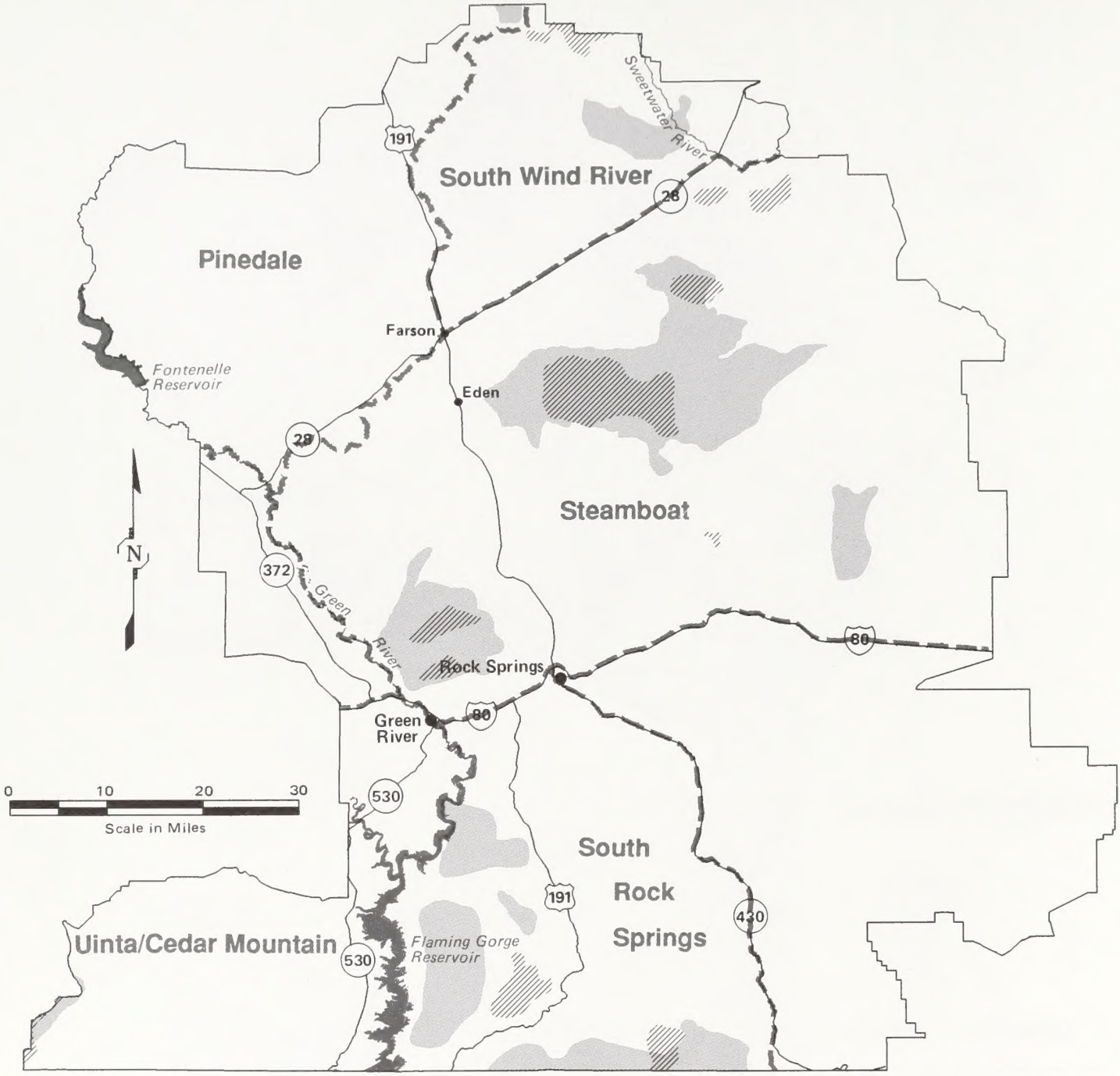
Crucial Winter Range

Herd Unit

Map 71

Antelope Habitat

Green River Planning Area



Crucial Winter Range

Birthing Area

Herd Unit

Map 72

Elk Habitat

Green River Planning Area



Crucial Winter Range

Birthing Area

Herd Unit

Map 73

Moose Habitat

Green River Planning Area

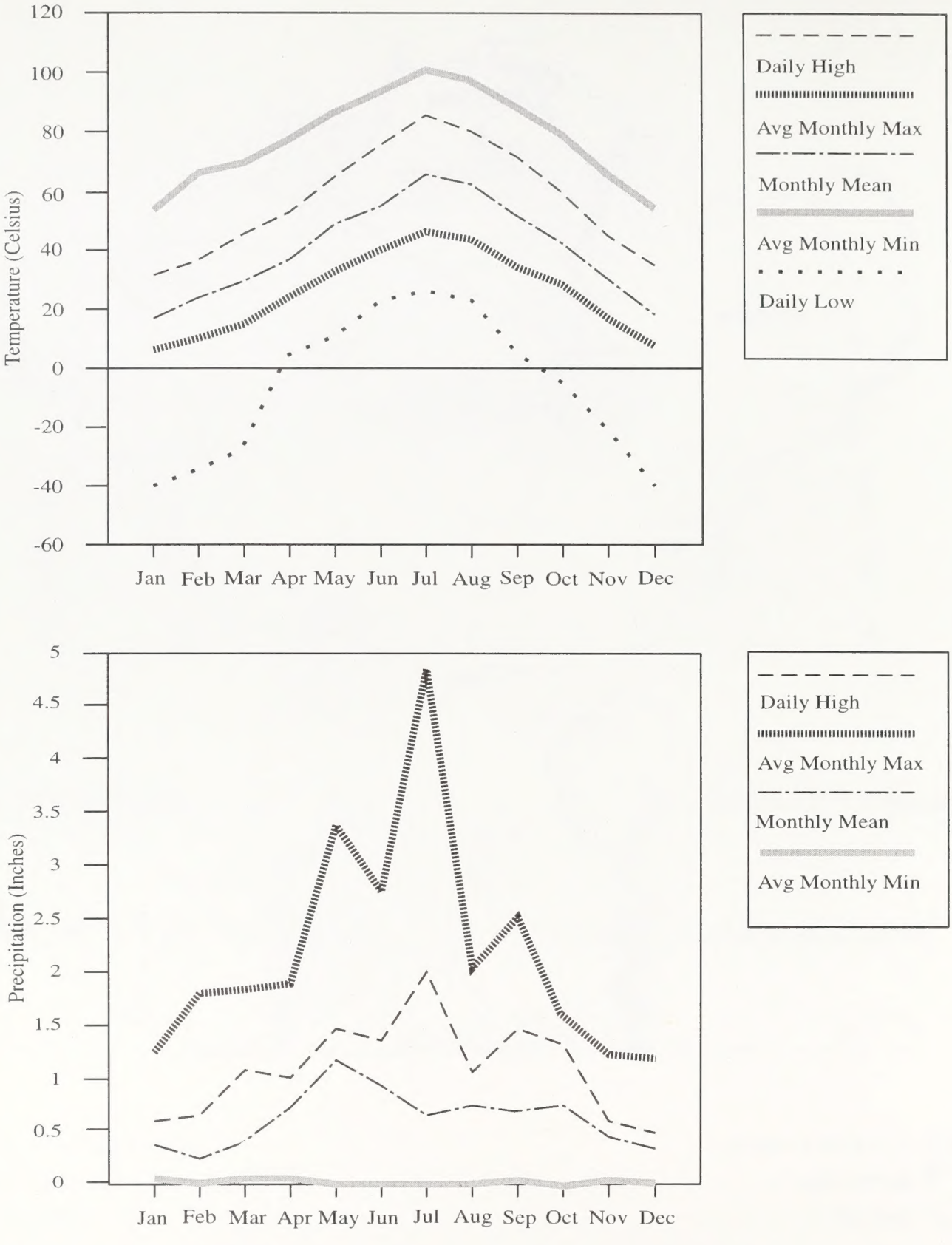
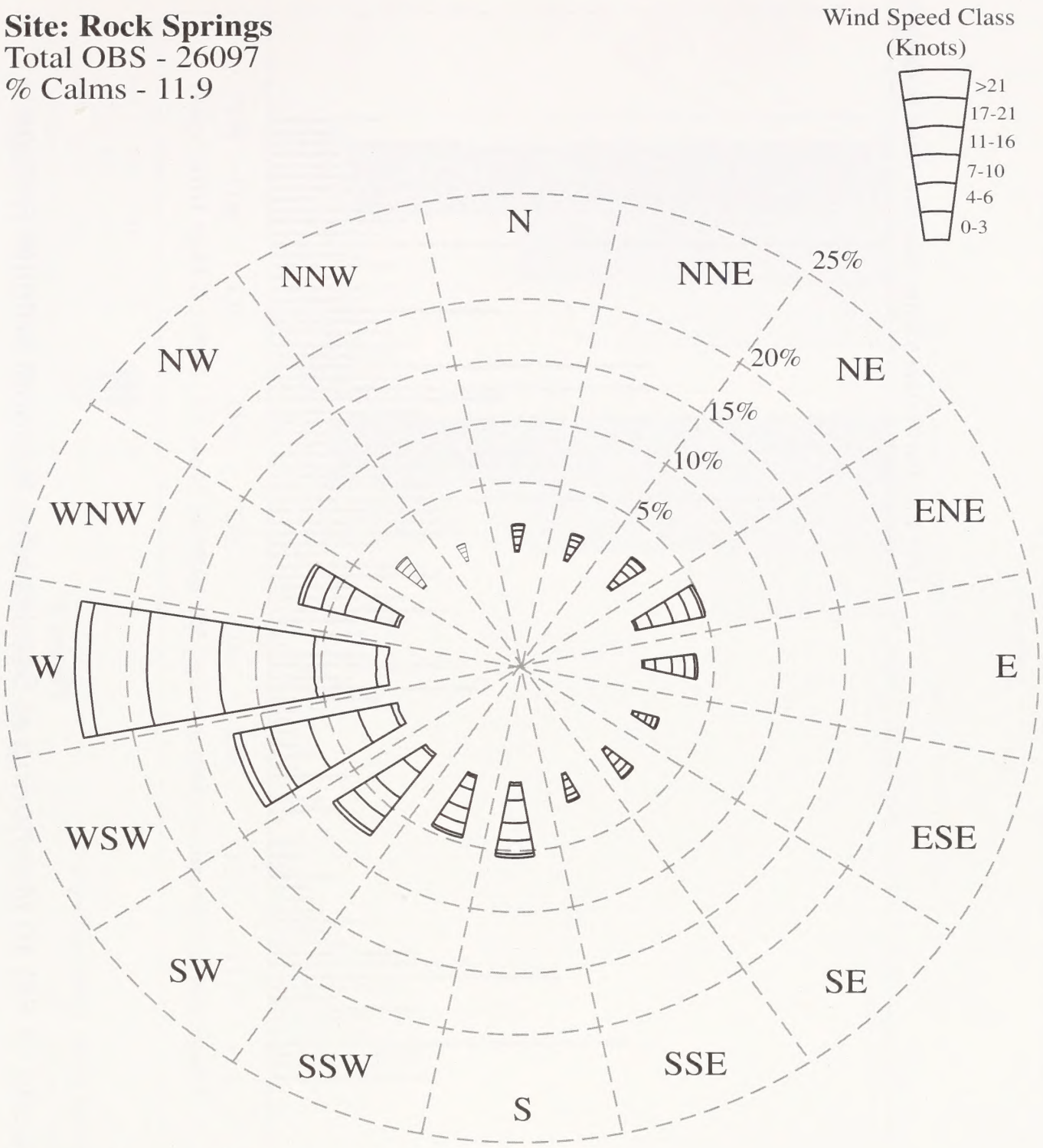


Figure 3

Temperature and Precipitation at Green River, Wyoming

Green River Planning Area

Site: Rock Springs
Total OBS - 26097
% Calms - 11.9



Note: Data Collected 1968-1977.
Science Applications, Inc., 1980.

Figure 4

Annual Wind Rose for Rock Springs, Wyoming

Green River Planning Area

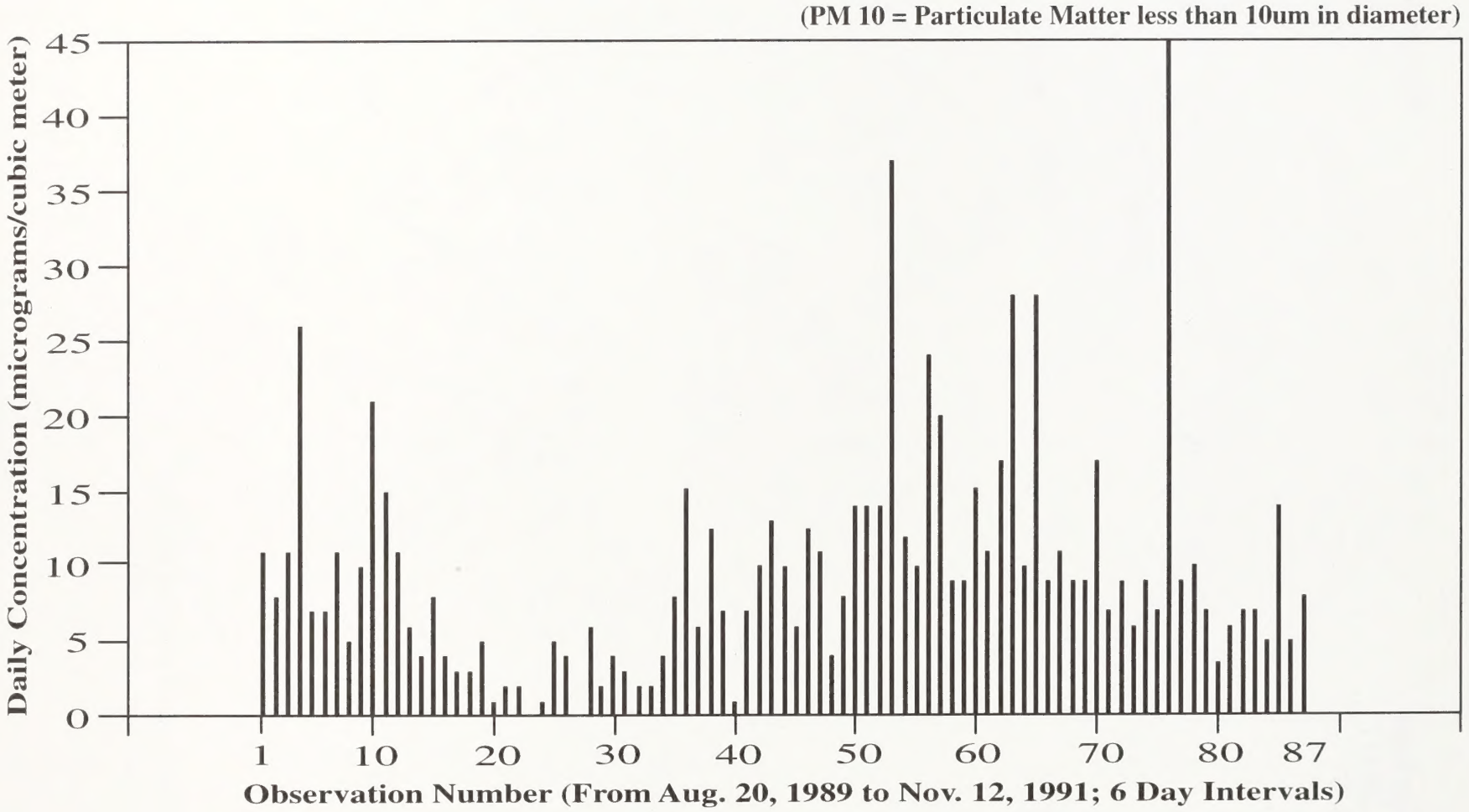


Figure 5

Results of PM 10 Monitoring at Seedskadee National Wildlife Refuge

Green River Planning Area

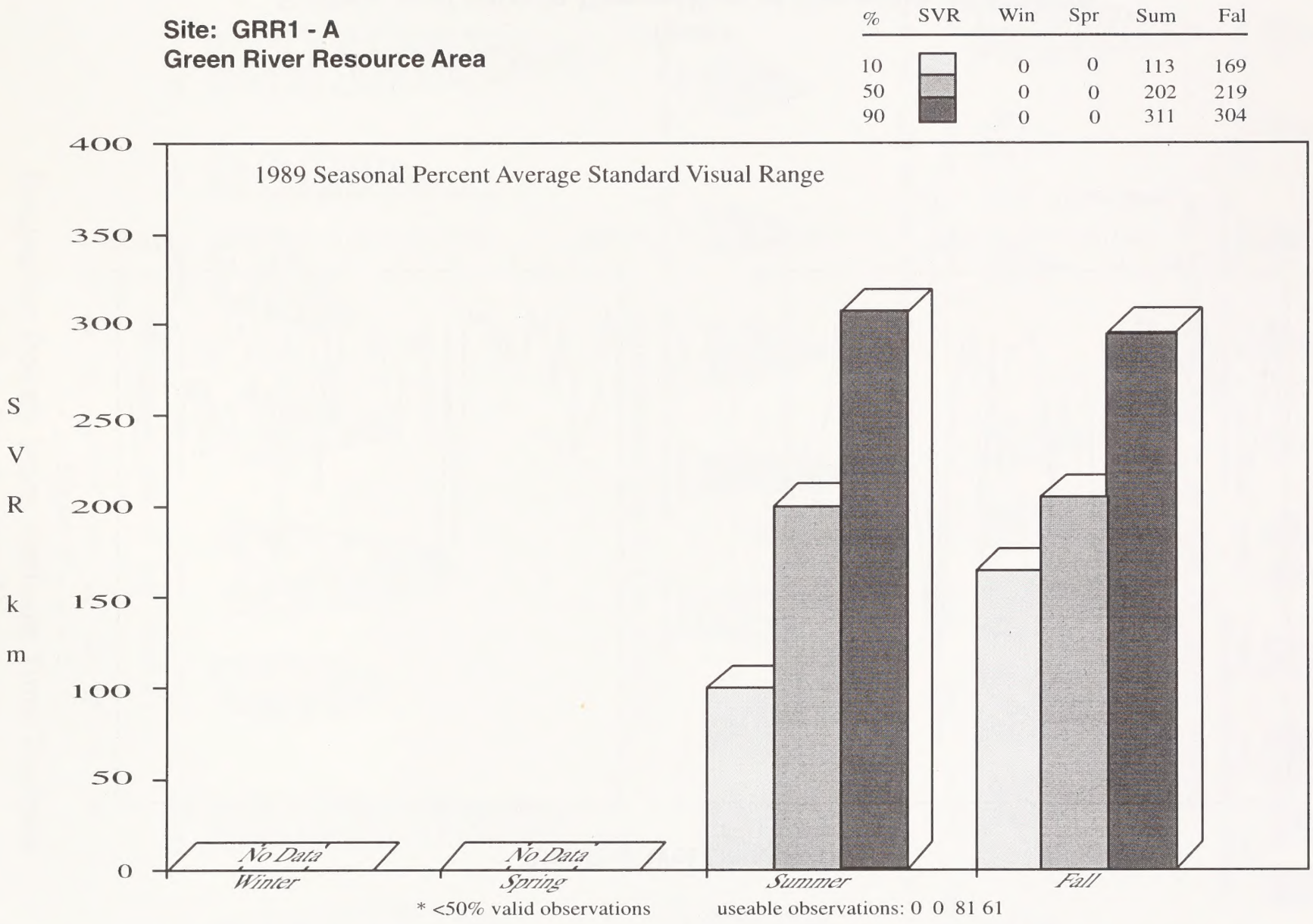


Figure 6

Seasonal Visibility at the Chicken Springs Site, Wyoming

Green River Planning Area

Site: WY06, Pinedale

Pearson Correlation Coefficient 0.8926

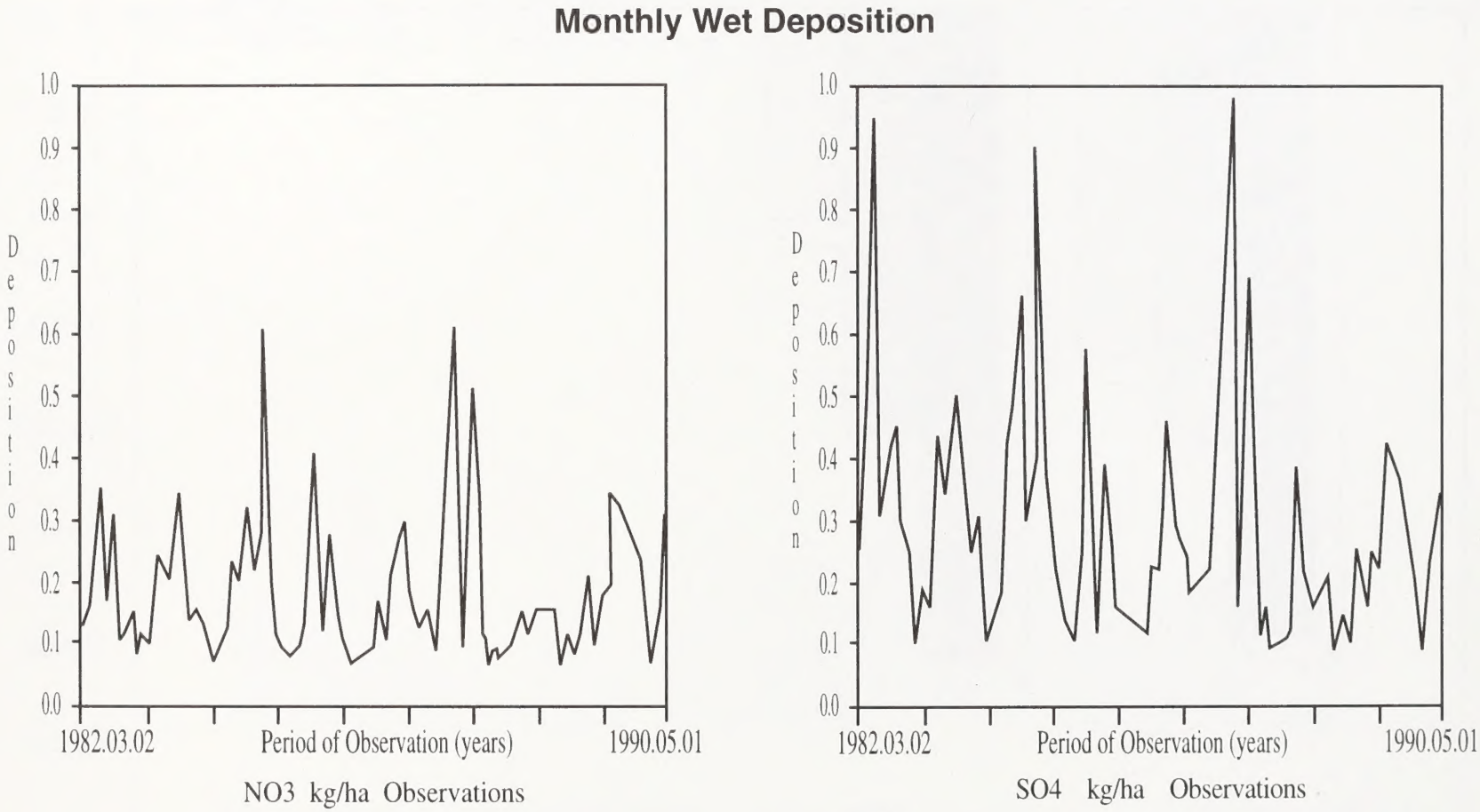


Figure 7

Sulfate and Nitrate Deposition at Pinedale, Wyoming

Green River Planning Area

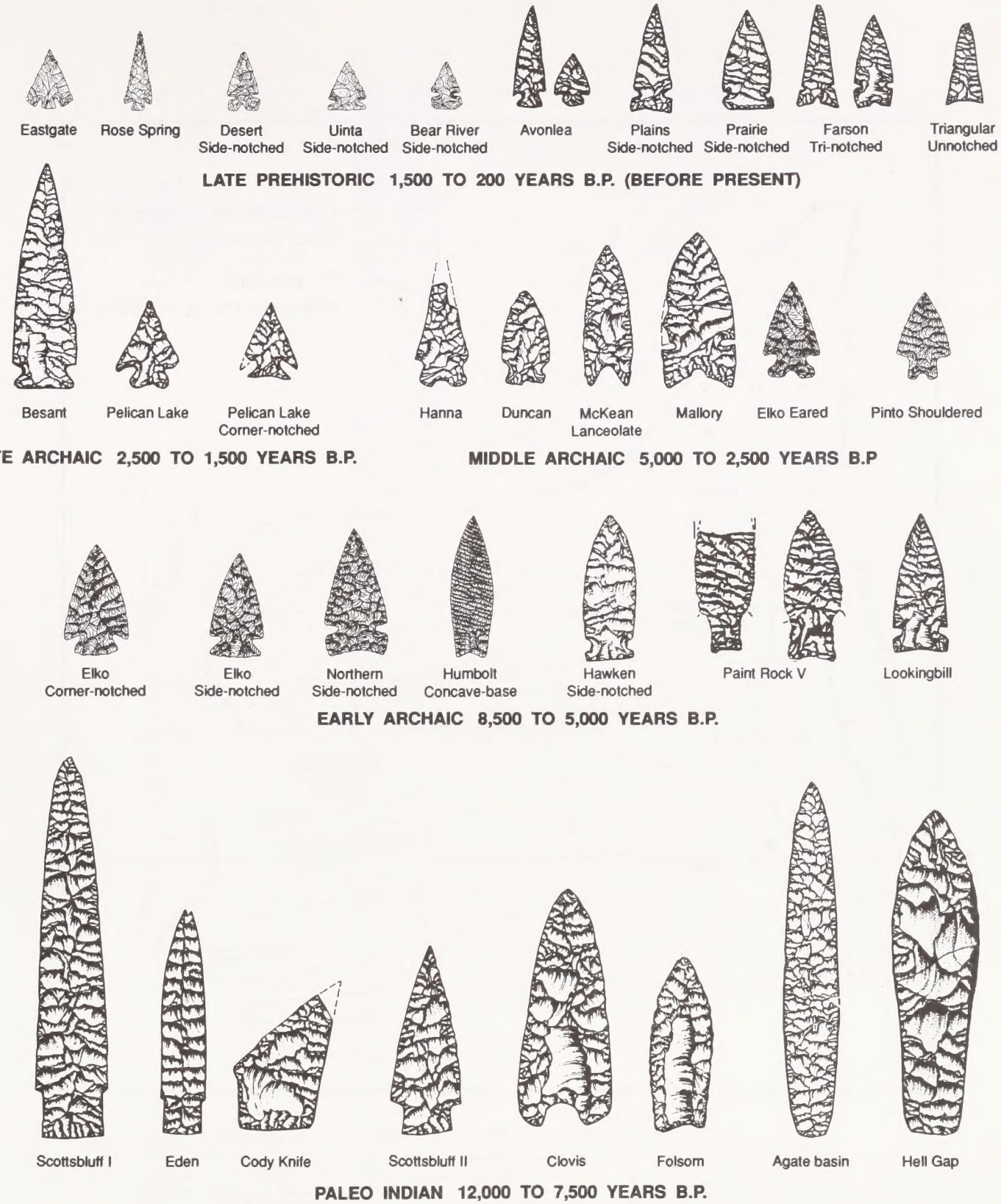


Figure 8

Projectile Points from Various Time Periods in Southwestern Wyoming

Green River Planning Area

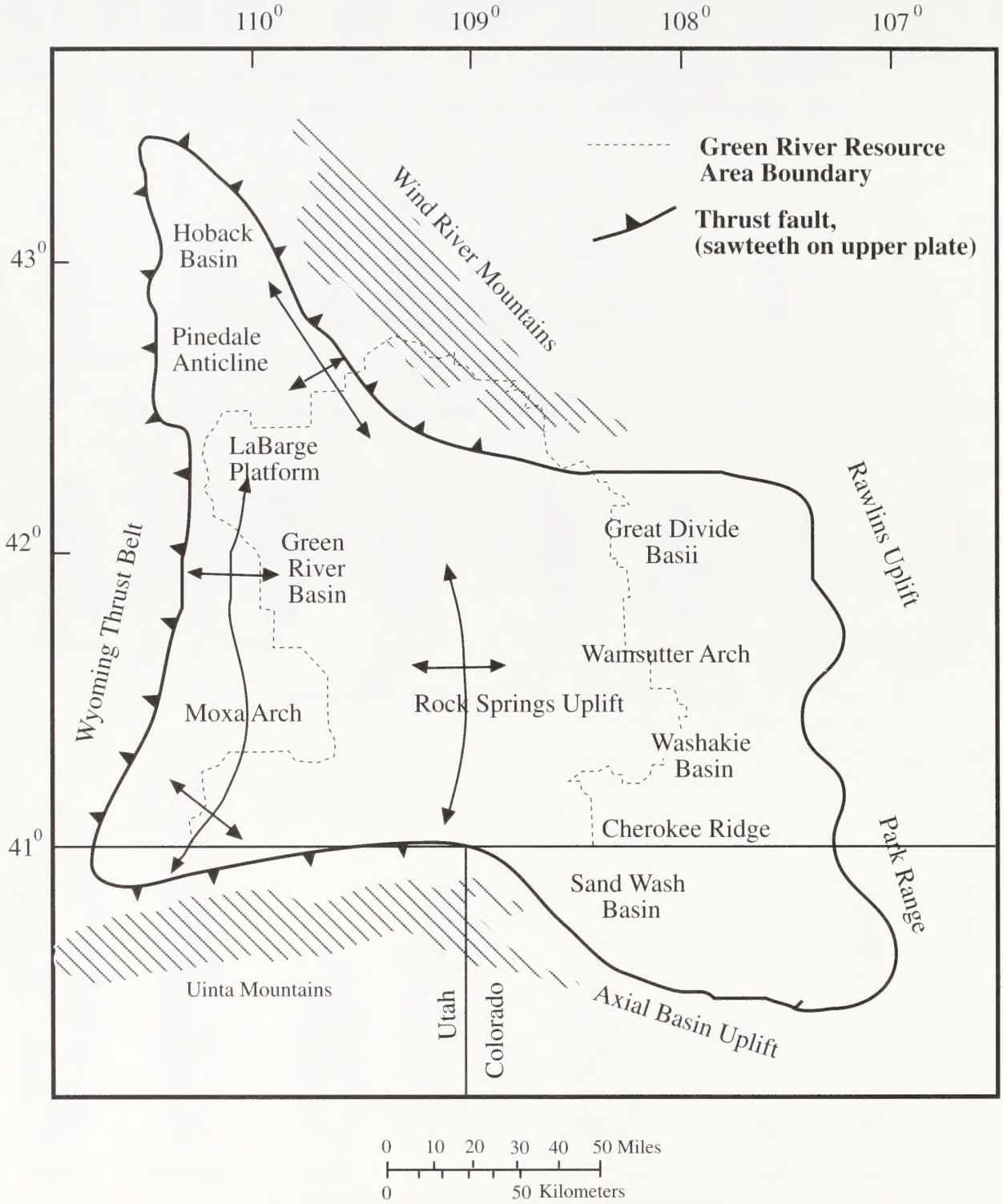


Figure 9

Greater Green River Basin

Green River Planning Area

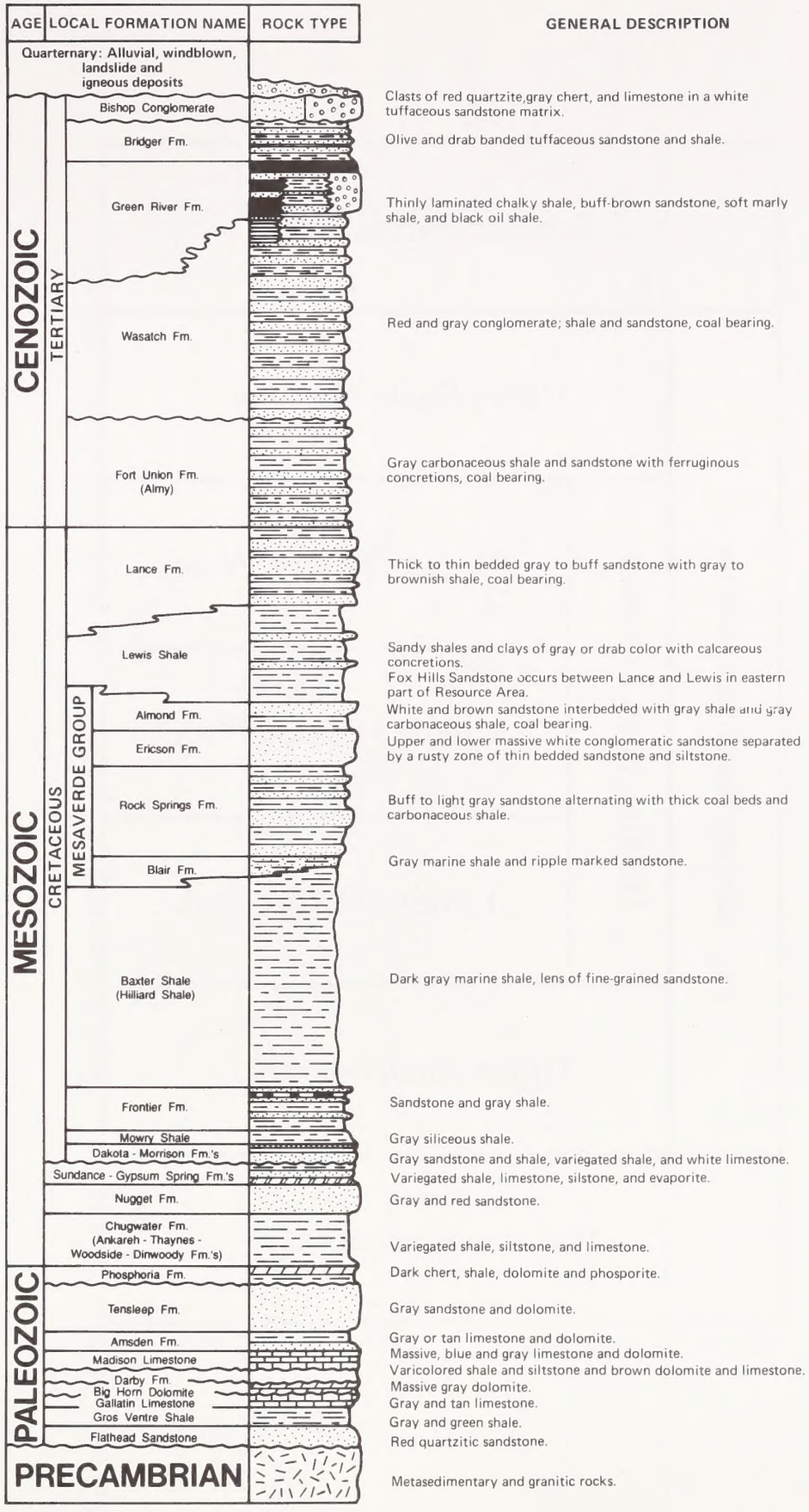
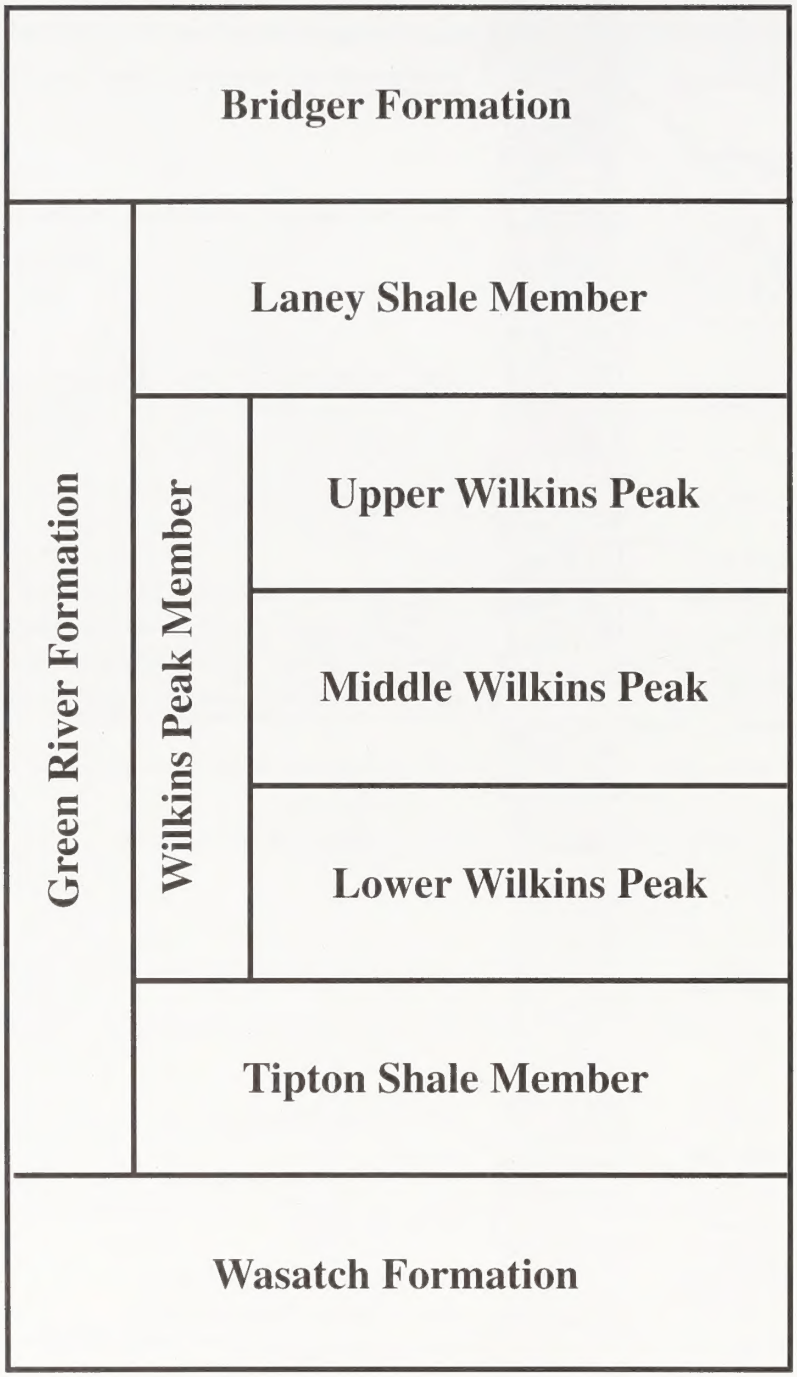


Figure 10

Generalized Stratigraphic Nomenclature Chart

Green River Planning Area

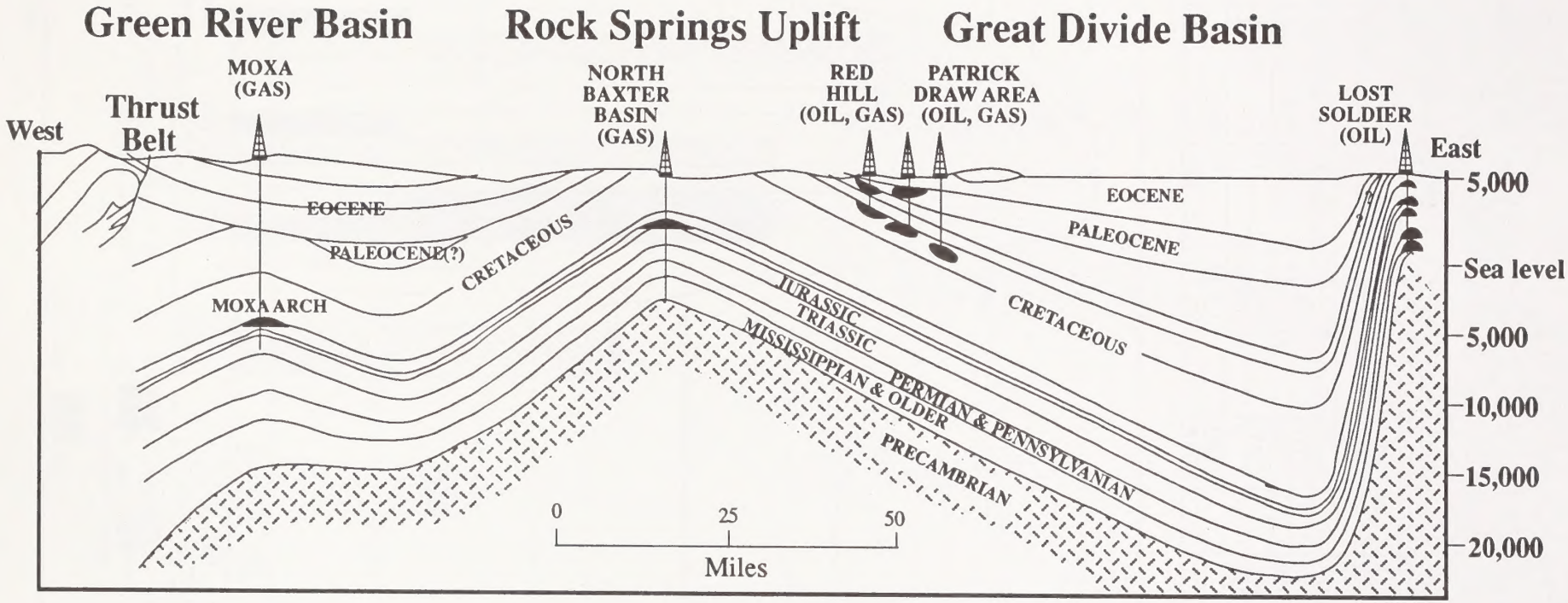


Source: Deardorff, 1963.

Figure 11

Generalized Stratigraphic Section for the Green River Basin

Green River Planning Area



Oil and Gas Fields

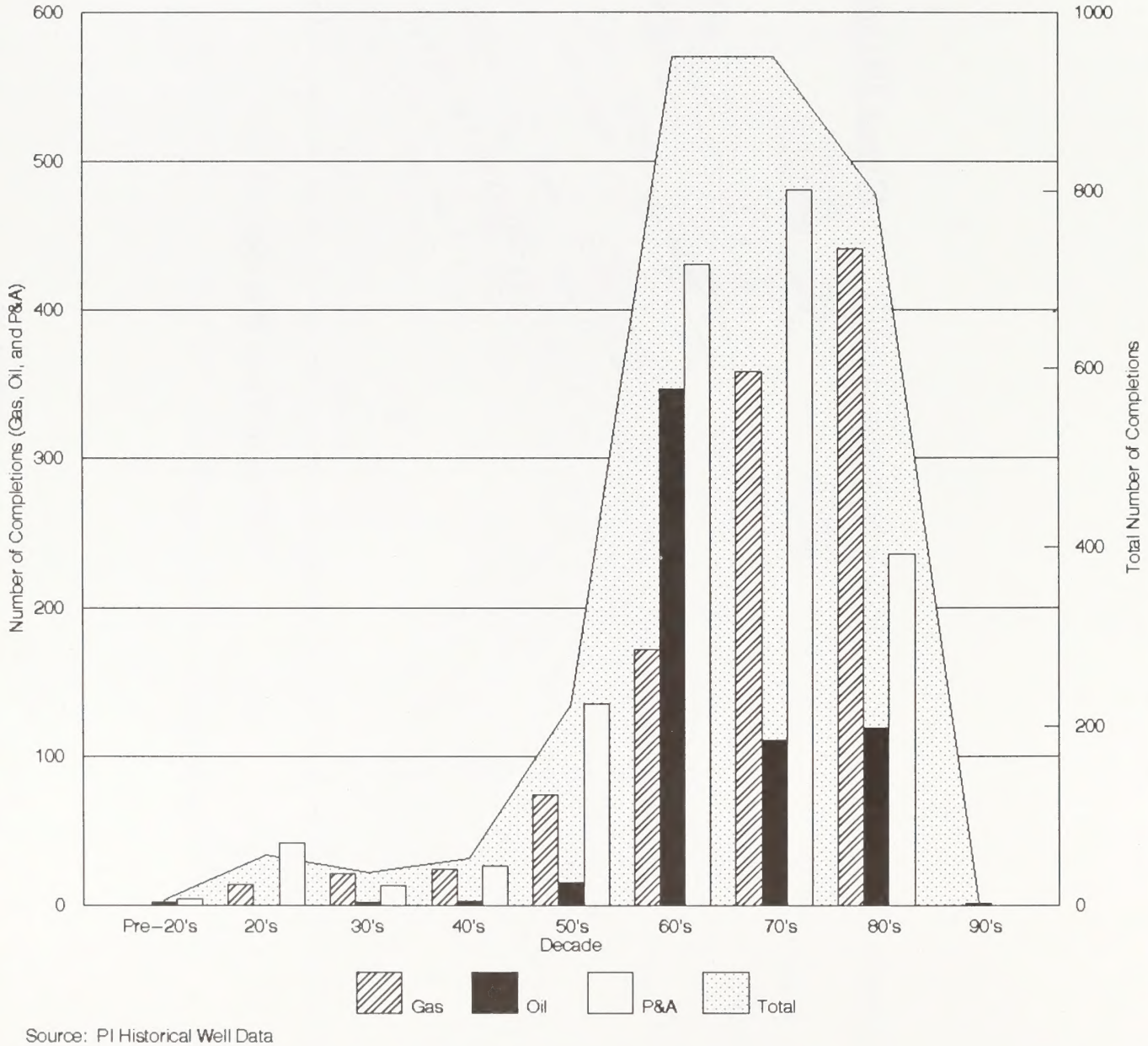
Figure 12

Cross Section of Green River Basin and Adjacent Areas

Green River Planning Area

GREEN RIVER RESOURCE AREA
WELL COMPLETIONS by STATUS
(Based on Wells Completed between 1900 – 1990)

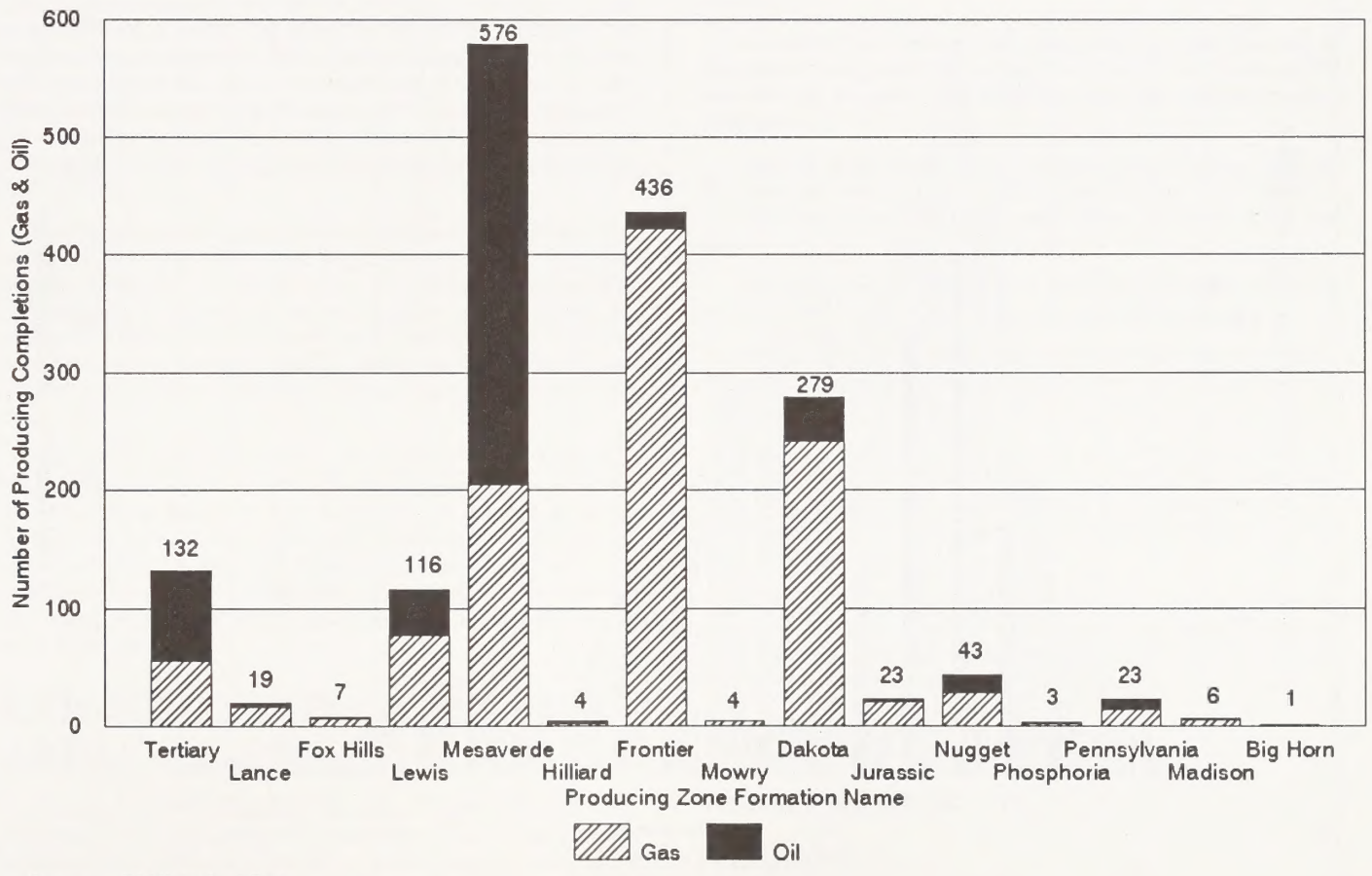
	Total		Gas		Oil		P&A	
Decade	Completions	Frequency	Completions	Frequency	Completions	Frequency	Completions	Frequency
pre–1920	6	0.20%	0	0.00%	2	0.33%	4	0.29%
1920	56	1.82%	14	1.27%	0	0.00%	42	3.07%
1930	36	1.17%	21	1.90%	2	0.33%	13	0.95%
1940	53	1.73%	24	2.17%	3	0.50%	26	1.90%
1950	224	7.29%	74	6.70%	15	2.50%	135	9.87%
1960	949	30.90%	172	15.58%	346	57.76%	431	31.51%
1970	950	30.93%	358	32.43%	111	18.53%	481	35.16%
1980	796	25.92%	441	39.95%	119	19.87%	236	17.25%
1990	1	0.03%	0	0.00%	1	0.17%	0	0.00%
Total:	**3,071**		**1,104**		**599**		**1,368**	
% of Total:	**100%**		**36%**		**20%**		**45%**	



Source: PI Historical Well Data

GREEN RIVER RESOURCE AREA
WELL COMPLETIONS by PRODUCING FORMATION
(Based on Wells Completed Between 1900–1990)

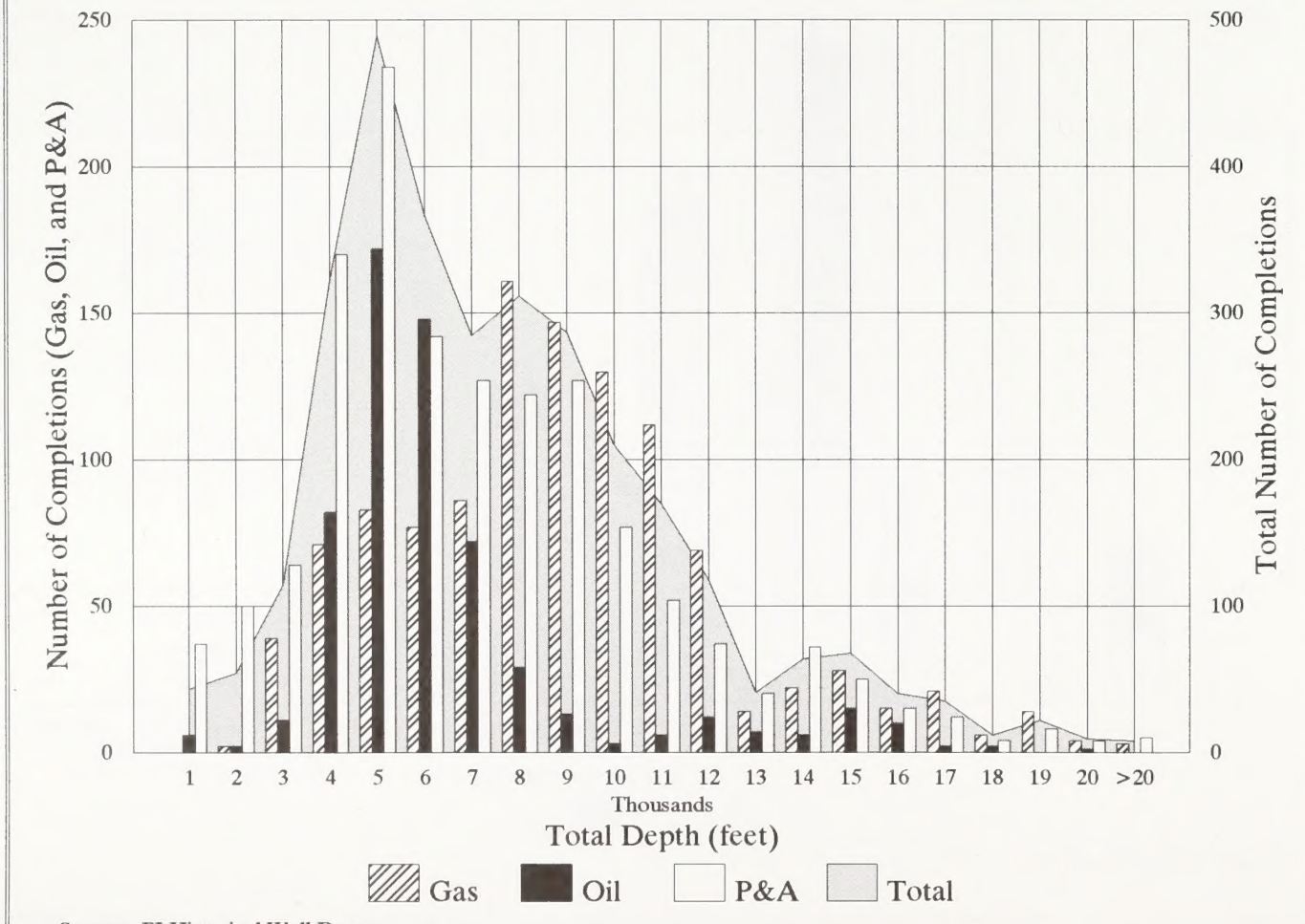
Producing Zone	Total		Gas		Oil	
	Completions	Frequency	Completions	Frequency	Completions	Frequency
Tertiary	132	7.88%	55	5.01%	77	13.32%
Lance	19	1.13%	16	1.46%	3	0.52%
Fox Hills	7	0.42%	6	0.55%	1	0.17%
Lewis	116	6.93%	77	7.02%	39	6.75%
Mesaverde	579	34.57%	204	18.60%	375	64.88%
Hilliard	4	0.24%	2	0.18%	2	0.35%
Frontier	436	26.03%	422	38.47%	14	2.42%
Mowry	4	0.24%	4	0.36%	0	0.00%
Dakota	279	16.66%	241	21.97%	38	6.57%
Jurassic	23	1.37%	20	1.82%	3	0.52%
Nugget	43	2.57%	28	2.55%	15	2.60%
Phosphoria	3	0.18%	2	0.18%	1	0.17%
Pennsylvania	23	1.37%	14	1.28%	9	1.56%
Madison	6	0.36%	5	0.46%	1	0.17%
Big Horn	1	0.06%	1	0.09%	0	0.00%
Total:	1,675		1,097		578	
% of Total:	100%		65%		35%	



Source: PI Historical Data

GREEN RIVER RESOURCE AREA
WELL COMPLETIONS BY DEPTH
(Based on Wells Completed between 1900–1990)

	Total		Gas		Oil		P&A	
TD (ft)	Completions	Frequency	Completions	Frequency	Completions	Frequency	Completions	Frequency
1,000	43	1.40%	0	0.00%	6	1.00%	37	2.70%
2,000	54	1.76%	2	0.18%	2	0.33%	50	3.65%
3,000	114	3.71%	39	3.53%	11	1.84%	64	4.68%
4,000	323	10.52%	71	6.43%	82	13.69%	170	12.43%
5,000	489	15.92%	83	7.52%	172	28.71%	234	17.11%
6,000	367	11.95%	77	6.97%	148	24.71%	142	10.38%
7,000	285	9.28%	86	7.79%	72	12.02%	127	9.28%
8,000	312	10.16%	161	14.58%	29	4.84%	122	8.92%
9,000	287	9.35%	147	13.32%	13	2.17%	127	9.28%
10,000	210	6.84%	130	11.78%	3	0.50%	77	5.63%
11,000	170	5.54%	112	10.14%	6	1.00%	52	3.80%
12,000	118	3.84%	69	6.25%	12	2.00%	37	2.70%
13,000	41	1.34%	14	1.27%	7	1.17%	20	1.46%
14,000	64	2.08%	22	1.99%	6	1.00%	36	2.63%
15,000	68	2.21%	28	2.54%	15	2.50%	25	1.83%
16,000	40	1.30%	15	1.36%	10	1.67%	15	1.10%
17,000	35	1.14%	21	1.90%	2	0.33%	12	0.88%
18,000	12	0.39%	6	0.54%	2	0.33%	4	0.29%
19,000	22	0.72%	14	1.27%	0	0.00%	8	0.58%
20,000	9	0.29%	4	0.36%	1	0.17%	4	0.29%
> 20,000	8	0.26%	3	0.27%	0	0.00%	5	0.37%
Total:	**3,071**		**1,104**		**599**		**1,368**	
% of Total:	**100%**		**36%**		**20%**		**45%**	



Source: PI Historical Well Data

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter presents the environmental and socioeconomic consequences of management actions described in Chapter 2. Both beneficial and adverse effects (impacts) are described.

Impacts to or from wilderness study areas, wilderness values, and related management are not addressed in this document. This discussion can be found in the Rock Springs District Final Wilderness EIS (USDI 1990b) or the Adobe Town-Ferris Final Wilderness EIS (USDI 1987a).

Assumptions used in analyzing the environmental consequences are described in Appendix 12 and are based on previous events, experience of personnel, and knowledge of the resources in the planning area.

Impacts described in this chapter are estimates based on the alternatives. In some cases, existing data were used; in others, very little data were available. Lack of data has contributed a degree of uncertainty to the impact estimates. However, the alternatives include professional judgments and projections of anticipated actions and levels that provide an adequate and reasonable range for analysis (Table 4-1).

The chapter is arranged to address impacts to all resource elements for each particular alternative. The impact analysis for Alternative A (the No Action Alternative) was prepared first, and contains some of the more detailed discussion of impacts that the other alternatives use for comparison. However, as in Chapter 2, the Proposed Plan is listed first to enable the reader to identify the preferred action alternative easily. Actions Common to All Alternatives were taken into account in analyzing the impacts for each alternative. In addition, impact causes and relationships common to all alternatives are included within this analysis (Appendix 13). Table 2-2 is a summary comparison of the estimated total impacts of each alternative.

For the purpose of analysis, short-term impacts described in this document are those that would last 10 years or less; long-term impacts would last 10 years or more. Irreversible or irretrievable commitments of resources and unavoidable adverse effects are discussed in the text if they would occur. Similarly, effects on a given environmental component caused by a particular management action are discussed if they would occur. Otherwise, such effects are not discussed.

The summary sections found in this chapter for each resource heading contain the cumulative effects of proposed actions within the Green River Resource Area boundary. A description of the factors considered in this cumulative impact analysis such as the effects of past, present, and future actions are included in the reasonably foreseeable development scenarios found in the assumption and analysis guidelines and in the affected environment in the RMP Final EIS.

EXPANDED IMPACT ANALYSIS AREA

A major concern identified by the public was that the level of oil and gas development analyzed in the Draft EIS was too small. In reviewing the information provided, some confusion was noted between the area defined as the Green River Resource Area, the area defined as the Green River RMP Planning Area, and that area known as the Greater Green River Basin (see Chapter 1). Based upon public comment, and in particular, new information provided by Barlow and Haun, it was recommended that we analyze an area larger than the planning area, for impacts related to oil and gas development. Because of this concern, an expanded impact analysis area was identified that extends outside the planning area boundary where activities and facilities may either affect or be affected by resources and actions within the planning area. Projected oil and gas development activities and support facilities were major factors in influencing the area selected.

The expanded impact analysis area does not follow a particular boundary. This extended area takes in the Hickey-Table Mountain and Moxa Arch developments on the west, north to the Big Piney CAP and Soda developments, east to the Wind River Front and Shoshone National Forest boundary, south and east to the Greater Wamsutter, Creston/Blue Gap developments, and southeast to Baggs (Map 74). A more detailed map of this area is on file in the Green River Resource Area office. The expanded area also includes all the trona development area, including the new Wold mine, and adds the communities of Little America, Granger, LaBarge, Big Piney, Marbleton, Baggs, and Wamsutter. The analysis is based on the best information we have at this time and could change as new information is acquired or situations change. The actions determined to influence this area the most include further oil and gas development of the Green River Basin, continued trona development, and related socioeconomic features. Not all resources are affected by development. We have tried to identify the environmental effects that were meaningful and to pick an area of influence that would also be meaningful.

For minerals, oil and gas and trona were influences included in identifying the expanded impact analysis area. Locatable and salable minerals did not affect the identification of the expanded impact analysis area.

Watersheds identified in the expanded impact analysis area are the same as discussed in the draft document, and include drainage into the Green River, the Sweetwater River, and the Great Divide Basin.

Wildlife habitats include the herd units and habitats affected by activities within the entire expanded impact analysis area.

Socioeconomics considered areas and actions that were influenced by services provided by cities, towns, and facilities found within the Green River Resource Area boundary.

Special Status species habitat did not directly influence the boundary selection, nor did wild horses and their herd areas, ACECs, ORV use, visual resource management prescriptions, recreation, wilderness, fire, wild and scenic rivers, air quality, hazardous materials, land uses, livestock or vegetation.

The basic assumptions that were applied to the planning area were also applied to the expanded area with the exception of oil and gas. Adjustments to the oil and gas assumptions were necessary for the expanded analysis area (see Appendix 12-1).

PROPOSED PLAN

Impact Analysis

Air Quality

Activities which ultimately can have an impact on air quality are found in Table 4-2. For instance, air pollution from surface mining, construction activity, road use, facility emissions, prescribed fire,

and wildfire affect air quality. As an aid in comparing the magnitude of the air quality impact of each of these activities, typical emission factors are also listed. Another component of the magnitude of the impact of various activities on air quality is the size, extent, and duration of the activity.

The final climatological pollution potential map (Map 75) indicates that the entire planning area has a moderate pollution potential risk. However, some areas may have a higher risk category, given topographical features which limit dispersion. For instance, near the town of Green River, the pollution potential approaches the high potential category due to the river cliffs. Although these areas border on becoming high potential, it is not anticipated that actual impacts would occur. The requirement for site specific analysis prior to implementing an action would result in appropriate mitigation to maintain air quality. Mitigation may include selection of another site location, facility size or type, etc. Adverse impacts to users could occur because of restricted location for placement of facilities.

Table 4-3 lists the major air pollution emission sources in the planning area. Major sources are defined as producing 100 tons per year or more of one or more criteria pollutants. The emissions given for these sources in the table are the actual emissions for 1991. There are numerous smaller sources in the area as well, but they do not have the same annual reporting requirements to the Wyoming Department of Environmental Quality as major sources. Under the Proposed Plan, these impacts would continue as indicated since the companies have approved operating permits from the Wyoming DEQ and the resulting ambient air quality is within standards. New sources such as another coal mine, more oil and gas wells and processing plants, and another trona mine and processing plant might be developed. At this moderate rate of growth, an improved air quality and visibility monitoring program in the basin would likely detect any problem before it became serious. Appropriate mitigation would be applied based on case-by-case environmental impact analyses. Other particulate emissions would result from surface disturbing activities and from fire activity. See Appendix 13 for a more detailed discussion.

Summary

Within the Planning Area Only: Individual fires and construction activities would have a short-term effect. Industrial emissions, dust from continued road use, and surface mining, and vehicle emissions would be anticipated to occur over the long term. The level of construction activity would be reduced and impacts would be less than Alternative A. However, additional acres burned through prescribed fire would increase short-term impacts from smoke generated. No irreversible irretrievable impacts would be expected.

Considering the Expanded Impact Analysis Area: the surface disturbances and activities that could occur in the expanded area could contribute to increased dust and emission levels, requiring additional mitigation, over a broader area, to ensure air quality standards are met. Management prescriptions for the Wind River Front (in the planning area) would also protect the Class I airshed in the Wind River Mountains (in the expanded analysis area) from the combined effects of actions directly adjacent to the Class I area. Vehicle use and campfires could potentially impact the Class I airshed. However, this impact is not anticipated to be significant as management prescriptions would mitigate much of it.

Cultural, Natural History, and Paleontological

The anticipated impacts to cultural, natural history, and paleontological resources would not be significant since steps outlined in the Assumptions for Analysis (Appendix 12-1) would be followed. Disturbance with no mitigation could occur to some non-NRHP eligible sites and very rarely to NRHP eligible sites. However, the loss, even of sites not eligible for the NRHP, would be detrimental to the totality of the cultural resource data base.

The number of sites in this discussion is derived by dividing the number or acres to be impacted by 640 (number of acres in a section) and multiplying the number of sections by 3.2 (average number of sites per section). These numbers are very general and are presented for the purpose of comparing the various alternatives in the plan. This formula is discussed in more detail in Chapter 3, Affected Environment.

Authorization of linear rights-of-way could impact approximately 30 sites. Land disposal could allow approximately 50 sites to pass into ownership where management to NHPA standards would not be required. Fort LaClede would be acquired and protected. Retention of 992 acres of cultural withdrawals and the addition of 6,735 acres of withdrawals would protect specific cultural values. Construction of well locations, pipelines, and access roads could impact approximately 70 sites and destroy the integrity of an undetermined number of miles of historic trails. Surface disturbance associated with coalbed methane development could impact approximately 15 historic properties. Strip mining and construction of surface support facilities could result in impacts to approximately 110 historic sites. Although only 61 acres of surface disturbance is projected in playa lake areas, the areas where development is proposed includes a playa lake-sand dune complex of known high site density. It is estimated that 12 significant sites could be impacted. Opening new coal mining operations in Deadman Wash and Beans Spring would impact cultural resources. Site density is likely to be twice the average density, or 7 to 8 sites per section in the Deadman Wash area. Beans Spring would likely be less than the average.

Site specific cultural resource management plans for 15 trails (800 miles) and about 18 sites would benefit cultural resources by targeting management and available budget.

Activities in Little Colorado Desert, North Nitchie Gulch, and Wamsutter Arch with an alternative strategy, to standard Class III inventory, could result in destruction of an estimated 14 sites. It is anticipated that by conducting Section 106 consultation within a NRHP District concept, adverse effects to these sites would be mitigated by data recovery elsewhere within the NRHP District.

Management of geologic and ecologic values of Steamboat Mountain and Boars Tusk-Killpecker Sand Dunes and petroglyph sites would help preserve their values as sites of spiritual significance identified by Native American groups.

A hypothetical zeolite mine has minimal potential to impact cultural resources. It is estimated that one significant historical property could be impacted.

Closure or limitation of off-road vehicle use to designated roads and trails on approximately 1,006,335 acres would lessen potential impacts to historic properties by lowering the potential for vehicular damage and unauthorized activities such as vandalism and looting. Closing areas to geophysical vehicles and blasting would protect significant cultural sites and areas on approximately 9,700 acres from destruction and associated erosion.

Managing approximately 2,500 acres with cultural sites for the Class II visual resource management classification would result in protection for significant rock art sites.

Beneficial effects would result from constraints on surface disturbing activities.

Occasionally, watershed and cultural resources may both be at risk in the development of facilities such as oil and gas wells,

pipelines, or access roads. At times, it may be impossible to avoid a significant cultural resource without placing a facility in a location that would be detrimental to watershed. This impact could be significant; however, it is anticipated such situations would occur rarely, and fewer than 10 sites would be affected over the next 20 years.

Generally only beneficial effects would result from wild and scenic rivers management. Protective measures for wild and scenic rivers would usually also favor cultural resources. Preservation of wild and scenic qualities of specific rivers would add aesthetically to efforts to preserve our heritage as reflected in prehistoric and historic occupation related to the river.

Whenever an activity on public lands has the potential of disturbing scientifically significant paleontological resources, appropriate mitigation would be applied to that activity (paleontological monitoring, surveying, excavation, etc.). Mineral exploration, pipeline construction, road building, mining, and other types of surface disturbance thus have two types of direct impact on paleontological resources. First, these activities may destroy some scientifically significant fossils. Second, the mitigating measures associated with these activities may bring additional fossils and data to the notice of professional paleontologists; data that might not otherwise be studied.

There is also an indirect impact. The above kinds of development make access to the public lands easier for the general public. Improved access to the public lands may result in the discovery of more paleontological resources, but may also provide opportunities for unauthorized collection of those resources.

Summary

Within the Planning Area Only: Potential impacts to approximately 120 cultural resource sites (mostly non-NRHP eligible sites) would result from surface disturbing activities. Destruction of sites could also result from scientific research and from data recovery mitigation efforts. While data recovery enhances our knowledge, it also destroys the resource. Targeted management efforts within cultural resource management plans would benefit and enhance cultural resources. If sites are not avoided, an irretrievable loss of the resource would occur.

Other actions providing long-term benefits to cultural management would be: acquisition of Fort LaClede, 7,727 acres of withdrawals, existing and proposed management of the Steamboat Mountain and Boars Tusk-Killpecker Sand Dunes areas for geologic and ecologic values, management around significant rock art sites, closure or limitation of areas for off-road vehicle use, and closure of 177,117 acres to geophysical vehicles and explosive charges.

Information gained from research on archeological resources could provide valuable insight into past climates and human use of resources which could improve management of public lands.

With increasing surface disturbance, it becomes increasingly difficult to avoid impacting cultural resources. For instance, increasing the density of natural gas wells from four to eight per section exponentially increases the likelihood that avoidance of cultural sites will not be possible. Conversely, additional development could have the beneficial effect of increasing the amount of cultural resource inventory performed thus adding to the database of known resources. Furthermore, data recovery mitigation efforts resulting from more development increases our understanding of prehistory and history. More effective and efficient cultural resource management could result from better understanding of the resource base.

Increasing amounts of surface disturbance cumulatively can result in severe degradation of historic trails even if the ¼ mile protective buffer is adhered to. Even disturbance ¼ mile away can be a visual intrusion on the integrity of historic trail resources. Cumulatively, these intrusions would significantly diminish the historic trail resource.

Similarly, increased surface disturbance within view of Native American rock art sites, but beyond the ½-mile vista could have an adverse effect to the visual integrity of the sites.

Given the variable terrain of much of the resource area it is not practical to prevent all visual intrusion on historic trails, rock art sites, and other cultural resources for which visual integrity is important. Therefore, some level of visual impact is inherent.

Population increases could increase the potential for unauthorized activities such as vandalism and ARPA violations. Mitigative efforts should include increased law enforcement effort and more stringent management constraints such as road closures and increased proactive management efforts both programmatically and at specific sites.

Considering the Expanded Impact Analysis Area: As with Alternative A, more cultural information would be discovered through inventory of sites in the expanded area; however, fragmentation of historic trails would increase, as would the importance and sensitivity of unfragmented historic landscapes. Cumulatively, intrusions could significantly diminish the historic trail resource. Impacts upon the visual integrity of historic trails within the expanded impact analysis area increase the significance of other areas where trail resources retain excellent visual integrity such as the South Pass Historic Landscape. The effects to the South Pass Historic Landscape should be less than under Alternative A due to the implementation of management prescriptions applied to the area. No additional effects would occur either to or from the expanded analysis area relative to paleontological resources.

Fire

Fire management activities associated with both wildfire and prescribed burns would create or provide a variety of benefits and impacts for numerous resources. Examples of benefits would include increased forage for livestock, wild horses, and wildlife. Examples of impacts would include cultural sites or special status plant species damaged or destroyed through fire line construction and/or vehicle operations, the loss of cultural rock art through the application of dye-impregnated fire retardant, the loss of sage grouse strutting habitat, the loss of soil stabilizing vegetative cover on unstable/erosive soils, or the damage or destruction of human-made facilities, such as fences, oil and gas wells and pipelines, and campgrounds. Refer to the other resource sections in this chapter for additional fire related impacts.

The primary impact to the fire management program would be increased prescribed burn and wildfire suppression costs. Increased costs would result from increased fire frequency, increased fire size and/or intensity, and increased costs of doing business.

Factors affecting fire frequency are off-road vehicle use, recreational activity, mineral exploration and development, and firewood/timber cutting.

Off-road vehicle use frequently occurs in remote, difficult to access areas. While the off-road vehicle trails do provide access to those remote areas, the time required to get fire suppression equipment to fires is considerable. Off-road use contributes to wildfire activity in two ways: 1) escaped camp fires, and 2) fires ignited from the off-road vehicle (i.e., the catalytic convertor).

Recreational activity (i.e., camping, picnicking, hunting, fishing, backpacking) also frequently occur in remote, difficult to access

areas. Wildfire activity from recreational activity occurs the same as off-road vehicle use.

The designation of special recreation management areas would invite more public use and would increase the probability of wildfire occurrences.

Mineral exploration, development, and production add to potential wildfire occurrence through an increased number of ignition sources, i.e., catalytic convertors; surface explosives; welding equipment and operations; and sparks from heavy equipment operations, etc.

Firewood/timber cutting contributes to wildfire activity through escaped campfires, off-road vehicle operations (catalytic convertors), and sparks from chainsaws or other logging equipment. While logging operations frequently create openings that eventually become fire breaks, the initial increase in logging debris or slash would result in more intense and difficult to control fires.

Factors affecting fire size and/or intensity include restrictions on equipment use and activities that increase or decrease fuel loading. For example, the use of fire suppression vehicles would be restricted to existing roads and trails in known cultural resource sites and on about 3,610 acres containing special status plant species and known plant habitat. The use of fire retardants and other suppression equipment is restricted in several special management areas. Fire intensity due to increased or decreased fuel loading are attributable to livestock grazing and timber harvesting. Livestock grazing generally reduces the amount of fine fuels which decrease fire intensity. However, excessive removal of fine fuels can result in increased brush production which would increase fire intensity.

Factors affecting the cost of doing business are an increased frequency of unauthorized hazardous material sites and the increase of the number of wildland/industrial and wildland/urban interface areas.

Hazardous material areas present a serious health hazard to fire fighters who come in contact with them. To promote safety, additional training and specialized equipment may be needed.

As the number of wildland/industrial and wildland/urban interface areas increase, so does the demand for fire protection and the expectancy for immediate response. The BLM would only provide wildland protection on BLM-administered public lands.

Factors affecting prescribed burn costs are restrictions on the use of vehicles or other equipment, establishing or constructing black lines or control lines around sensitive resource value areas such as cultural resource or special status plant species sites, and requirements to burn some sensitive watersheds in the spring. Spring burning requires roughly twice as much fine fuels as fall burning.

Increased activity that would result in the use or assembling of people on wildlands would increase the probability that a wildfire would occur. Prolonged lack of prescribed burns or wildfires would reduce the grass/forb component of the system and increase brush occurrence.

Increased fire activity may develop greater exposure of firefighters to incidental hazardous waste during suppression activities, consequently creating a greater threat to firefighter safety.

Summary

Within the Planning Area Only: Short- and long-term impacts could occur from additional costs for wildfire suppression and prescribed fire, accrued from restrictions imposed by other resource management requirements.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to fire.

Forests and Woodlands

Implementation of the Proposed Plan would result in all commercial forest lands in the planning area being placed in an intensive management category. It would also result in the annual sales quantity being reduced from a potential harvest level of 1,000,000 board feet (maximum volume output projection by the 1985 computations for the Rock Springs District) to 500,000 board feet. This would equate to a 50 percent reduction. In addition to the reduced volume output, the Proposed Plan also places operational and seasonal restrictions on forest management activities.

Timber management activities or firewood cutting would not be allowed within ¼ mile of potential wild and scenic river segments on the Sweetwater River. An estimated 400 acres of commercial forest land would be affected by the restriction; this is considered an insignificant impact to the commercial timber harvest base.

Impacts from operational restrictions within 500 feet of live water, floodplains, and/or riparian/wetlands could reduce timber harvest amounts.

Constraints on clearcuts and harvest methods can increase operational costs, and in some cases, some timber may not be accessible to harvest.

Seasonal restrictions applied to harvest activities (on 1,436 acres of forested big game winter range, 2,662 acres of elk calving areas, and 22 acres of sage grouse and raptor nesting activity and habitat) affects the manageability of forest stands. The harvest window could be severely shortened requiring additional years to complete harvests.

Logging and fuelwood gathering are not allowed on 1,436 acres from November 15 through April 30 for big game winter range protection, on 2,662 acres from May 1 through June 30 for protection of elk calving activities, and on 22 acres from February 1 through July 31 for protection of sage grouse and raptor nesting activity and habitat.

Surface disturbing activities (e.g., oil and gas, mineral location, road building, recreation site construction) would eliminate timber production on those sites.

Livestock grazing in areas of timber reestablishment could damage tree seedlings and have a adverse impact on forest health.

Release of hazardous wastes into the forest ecosystem either through spills or unauthorized dumping would have detrimental impacts on the flora and fauna.

Summary

Within the Planning Area Only: The reduced quantity of timber volume available for harvesting combined with the operational/seasonal restrictions on about 4,520 acres would decrease the amount of raw material available to lumber producers. It would also increase the costs of getting the material to a production center, decrease the timber sale receipts/revenue to the government, and would result in less forest management and forest stand maintenance in the commercial forest stands which would ultimately lead to increased losses to insects and/or disease. Impacts to the forest management program, forest resources, and the forest-based economics would be moderate to high when compared to Alternatives A and B, and roughly the same when compared to Alternative C.

Commercial timber management emphasis would be on the sustainability of wildlife habitat as well as commercial values. Some commercial timber may not be harvested due to the habitat requirements of wildlife and watershed resources.

Harvest levels would be up to 500 mbf less than under Alternative A, decreasing amounts of timber for commercial and non-commercial purposes.

Increased recreational demand (e.g., hunting, off-road vehicle use, wood-gathering) in commercial and non-commercial areas could create additional two-track roads, undesirable campsites, risk of forest fire and deterioration of forest health through soil compaction and damage to trees.

Considering the Expanded Impact Analysis Area: Since some of the forests in the expanded analysis area are within high potential areas for development, it is likely that the forests in those areas would be affected by development activities removing the trees. This could have an important affect in some localized areas and affect the viability of some future timber sales. Recreational and developmental demands in commercial and non-commercial areas could create additional roads, undesirable campsites, risk of forest fire and deterioration of forest health through soil compaction and damage to trees.

Hazardous Materials

Within the Planning Area Only: As development activities increase and as more people use the public lands, the possibility of chemical spills and even unauthorized dumping would also increase. However, hazardous waste spills and/or dumping would be cleaned up by the responsible party to avoid endangering human health and/or environmental damage. Lands would be inspected prior to transfer out of public ownership or prior to acquisition to protect the public from contact with hazardous materials. Water resources would be tested to determine if hazardous substances were present.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to hazardous materials.

Lands and Realty

Permittees would be impacted by rights-of-way avoidance, exclusion, and no surface occupancy areas, and 1,954,560 acres with seasonal restrictions. Approximately 25 percent of all rights-of-way would be impacted by these decisions (Table 2-4 and Table 2-8).

The majority of the exclusion areas are 10- to 20-acre petroglyph and historic sites and there would be no impact on rights-of-way. The exclusion of a ½-mile window along the Big Sandy River, the Sweetwater River wild and scenic river corridor, and the Currant Creek drainage would have minimum impact due to the lack of right-of-way activity in these areas, unless activity increases. The exclusion of rights-of-way within the South Pass Historic Landscape vista and the Greater Red Creek Area (55,880-acre ACEC portion) would have a major impact if activity should increase in these areas, since rights-of-way in exclusion areas would not be allowed unless mandated by law.

Avoidance areas would have small impact on rights-of-way except for those large areas within the Greater Red Creek Area (existing pipeline corridor), Greater Sand Dunes ACEC (38,650 acres), South Pass Historic Landscape (not in the vista-20,080 acres), eastern portion of the Wind River Front, and the Steamboat Mountain proposed ACEC area (43,270 acres). To avoid these areas would require major reroutes which would affect other offsite areas and increase costs to the permittee.

Following construction of Questar Pipeline Company's Mainline No. 58 pipeline loop, it is proposed to close the existing right-of-way concentration area within the proposed Greater Red Creek ACEC to additional rights-of-way. This would preclude future looping of the existing pipelines and construction of any new pipelines from the Clay Basin storage facility along the existing route. A right-of-way window along the east side of Flaming Gorge and along State Highways 430 and 530 would provide north-south access so future construction to and from Clay Basin would not be excluded.

A total of 3,610 acres of actual special status plant species sites would be avoidance areas for rights-of-way. These small sites would not have an impact on right-of-way location. Special status plant species sites would be withdrawn which would preclude disposal or entry. An inventory would be required on special status plant species habitat prior to construction, which would impact the timing of construction of rights-of-way as these inventories can occur only at certain times of the year.

Seasonal restrictions and other mitigation measures to protect resource values and threatened and endangered species (T&E) would impact rights-of-way. Approximately 30 rights-of-way may have to be rerouted or mitigated annually to protect cultural/historical, wildlife, and T&E values. Crucial wildlife habitat would impact the location or timing of rights-of-way construction. Wetland/riparian areas and floodplains also would impact the location of rights-of-way.

The possibility of high dust levels resulting from use of unpaved access roads would necessitate stipulations to control dust. All construction rights-of-way as well as access road rights-of-way would include a stipulation requiring that the holder meet Federal and State air quality standards.

Land tenure adjustments would occur only if the benefits outweigh any adverse impacts, and if there are no significant impacts which cannot be mitigated. A total of 24,527 acres have been identified as possibly suitable for disposal (Appendix 8-1). The ability to sell/exchange land and to issue Recreation and Public Purpose Leases and patents would benefit communities and industry. The sale or exchange of isolated tracts would result in the disposal of lands that are difficult to manage. Based upon past experience, it is anticipated that 3,000 acres would be sold, exchanged, or patented under the Recreation and Public Purposes Act over the next 20 years. Sale or exchange of lands may be necessary to accommodate the need for hazardous material or solid waste disposal sites. All lands must have a hazardous waste clearance prior to disposal which would increase the cost to the proponent or to the Bureau. Not mining the expanding residential areas around Rock springs would benefit future residents of the area by removing potential impacts from dust, visual intrusions, noise, and subsidence.

Existing withdrawals would be reviewed, and those which no longer serve the purpose for which they were withdrawn, would be revoked. These lands (nearly 90 percent of the planning area) would be open for entry, disposal, and mineral location. It is possible that there may be a rush to file mining claims (Table 2-6).

The withdrawal of an additional 261,764 acres would preclude disposal, entry, and mineral location. Assuming the mineral and stock driveway withdrawals are revoked, and all proposed withdrawals are completed, a total of 267,030 acres would be affected (Table 2-5).

As part of the federal program to reduce the salinity and sedimentation of the Green River Basin, desert land entries or agricultural leases would be authorized only if such use meets the soils/water and Department of Agriculture criteria. This would have slight impact as little of the planning area meets the criteria for desert entry.

The acquisition of access would be required to protect and promote resource values (ACECs, recreation, timber and mineral sales, access to BLM improvements, etc.) (Table 2-7).

Summary

Within the Planning Area Only: The majority of rights-of-way require short-term use of lands; long-term productivity is restored upon rehabilitation. The addition of three new rights-of-way windows would concentrate activities and reduce disturbance. Unavoidable adverse impacts could occur to rights-of-way management because of constraints for resource protection that impact the routes selected and the timing of construction. The greatest impact would be in those areas which would be managed as no surface occupancy areas and are listed as avoidance or exclusion areas for rights-of-way.

Existing withdrawals would be reviewed, and those which no longer serve the purpose for which they were withdrawn would be revoked. These lands (encompassing nearly 90 percent of the planning area) would then be open for entry, disposal, and mineral location. By revoking the withdrawals, it is possible that there may be a rush to file mining claims (Table 2-6).

The withdrawal of 267,030 acres of lands would preclude disposal, entry, and mineral location (Table 2-5).

Lands would be irreversibly lost to the public land base when sold or exchanged. Under exchange, however, lands of comparable value would be obtained. Lands currently authorized as landfill sites or industrial ponds would be irretrievably committed to compatible uses. For example, landfill sites are susceptible to subsidence and methane gas leakage; therefore, any later surface construction must take these potential problems into account. Railroad rights-of-way or any rights-of-way requiring large amounts of earthwork may be irretrievable due to cost and complexity of rehabilitation.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to lands and realty.

Livestock Grazing

Management actions would generally benefit livestock grazing management. In the short term, a reduction of active preference may be necessary for individual permittees, causing potentially significant impacts to individual permittees; however, in the long term, rangeland condition would be improved, providing long-term sustainability for range use, thus causing beneficial impacts.

Management actions implemented to achieve proper functioning condition could require that existing grazing systems be altered and riparian habitat objectives be established in some "I" category allotments. It may be necessary to establish utilization limits in riparian areas to meet riparian habitat objectives. Permitted active preference could be reduced to minimize utilization of riparian vegetation by livestock in some allotments.

Exclusion of grazing from Palmer Draw and special management exclosures (approximately 1,900 acres) would have a minor impact (160 AUMs) to the forage available in the planning area.

Approximately 67,700 acres would be treated by prescribed fire to increase livestock, wild horse, and wildlife forage; improve wildlife habitat; and regenerate shrubs. This action would cause short-term loss of forage in allotments where burns occur; however, this impact would eventually be outweighed by improvement of forage condition and availability, and habitat improvement. Overstocking could occur in portions of an allotment if livestock numbers are not reduced to compensate for loss of burned acreage for 2 growing seasons.

Avoidance of significant cultural sites, limitations on activities within ¼ mile of historic trails, and subordination of activities to historic landscape values in some areas may constrain the BLM's ability to construct rangeland improvements aimed at achieving better distribution and management of livestock. Added survey and design costs may be necessary to avoid effects to cultural resources.

Surface disturbance would be expected in areas where fossil collection would be permitted. However, the loss of available forage from the only documented area of collection, the Farson fish beds, would be minimal (less than 5 AUMs).

Management actions for lands and realty due to sales, rights-of-way, disposals, and exchanges would reduce available forage in the planning area. Approximately 24,528 acres and 1,087 AUMs would be taken out of production due to sales and other disposals.

Long-term benefits would occur for completion and implementation of 42 AMPs on about 60 percent of the planning area.

Existing lands and realty, mineral, wild horse, range, and wildlife actions have removed roughly 3,346 AUMs of livestock forage due to surface disturbing activities. Management actions proposed for the next 20 years would remove forage from an additional 55,523 acres. In total, forage production would be affected on 95,941 acres. During the next 20 years, an estimated 41,192 acres would be reclaimed. After reclamation, roughly 54,749 acres would still be out of forage production. The forage loss associated with the unreclaimed lands would be approximately 4,565 AUMs. Table 2-31 shows the expected losses by disturbance category.

Loss of forage would be expected from approximately 3,000 acres (233 AUMs) due to mineral sales, locatable mineral production, and trona mining.

Some off-road vehicle users would continue to harass livestock and leave gates open.

Surface disturbance on 9 allotments with lambing activity during lambing season (384,000 acres) could disrupt lambing.

The no surface occupancy stipulation on 3,610 acres of special status plant species sites and inventory requirement for potential habitat should not have an impact to livestock grazing management but could limit the locations available for rangeland improvement construction or increase project survey and design costs. Grazing distribution patterns may not improve if rangeland improvement project construction is limited.

Increased design and construction costs for range improvements would be expected for conformance to VRM Class II standards. In some instances, project construction would not be permitted and grazing distribution patterns would not improve.

The ½ mile buffer of no surface occupancy within wild horse viewing locations could prevent construction of rangeland improvement projects and prevent improvement of livestock distribution patterns. Implementation of this action could result in not achieving AMP objectives.

In order to provide 17,400 AUMs of forage to wild horses in 5 wild horse areas, decreases in active grazing preference could be necessary in certain allotments. Adjustments, if necessary, would be determined after analysis of rangeland monitoring information and evaluation of AMPs and wild horse herd area management plans. Currently, 16,200 AUMs of forage for 1,350 wild horses in four Wild Horse Management Areas is being reserved in associated allotments. Current rangeland monitoring has not detected severe impacts. However, monitoring has identified certain areas where concentrations of horses are causing localized overutilization of forage.

Current and proposed wildlife populations could impact livestock grazing management. Current and future AMPs would have objectives set to improve or maintain wildlife habitat condition. As AMPs are evaluated, adjustments to active grazing preference, grazing management, season of use, or kind of livestock may be necessary to ensure adequate wildlife habitat and forage availability. Rangeland and wildlife habitat monitoring would continue to determine if activity plan objectives are being reached. Overuse of vegetation (especially browse) could occur in areas where wildlife numbers are over strategic plan levels and active licensed grazing use is at or near preference.

Implementing management prescriptions for Steamboat Mountain would mean that range improvements might not be constructed unless elk would benefit. Therefore, livestock grazing distribution patterns might not be improved over most of the Steamboat Mountain Allotment, half of the Pacific Creek Allotment, and significant portions of the Sands, Bush Rim, and Fourth of July Allotments. Active preference in these allotments would not be increased and additional available forage would be allocated to wildlife.

Adjusting the strategic plan numbers of antelope in the Sublette antelope herd to 30,000 would not have adverse impacts to livestock.

BLM participation in the Wyoming Weed and Pest Program would result in some beneficial effects to the range management program by removing undesirable weeds which compete with native vegetation.

Range improvements would not be constructed within a ¼ mile of the Sweetwater River wild and scenic river segments. This action could prevent improvement of livestock distribution patterns. In addition, expansion of existing livestock operations or entirely new livestock operations would not be expected in allotments with wild and scenic river segments because additional available forage would not be allocated.

Increased design and construction costs for range improvements would be expected for conformance to management actions described in the Monument Valley. In some instances, project construction may not be permitted and grazing distribution patterns would not improve.

No surface occupancy stipulations or avoidance areas in the South Pass Historic Landscape, special status plant species habitat areas, and the Cedar Canyon, Pine Springs, and White Mountain Petroglyph ACECs could prevent construction of rangeland improvements, and livestock distribution patterns would not improve. In the Currant Creek area and the Red Creek ACEC, no surface occupancy stipulations could prevent rangeland improvement project construction. Therefore, livestock reductions could be the only option available to reduce grazing pressure in riparian areas.

Summary

Within the Planning Area Only: Losses of livestock forage would occur due to mineral development activities, lands actions, and other disturbances affecting approximately 4,565 AUMs. Prescribed burning on 67,700 acres and wildfire would have a short-term impact on grazing use and available forage but should result in long-term productivity of the forage.

No surface occupancy requirements affect project placement and development aimed at improving livestock distribution. This would have a long-term effect, and livestock distribution problems would continue for both the short term and long term.

Land disposal would be considered an irreversible irretrievable loss of forage.

Considering the Expanded Impact Analysis Area: Approximately 18,000 acres would be disturbed by the year 2000 in the cumulative area of influence. This surface disturbance could cause displacement of wildlife into surrounding herd areas. This could affect the ability of these areas to support existing wildlife populations and livestock numbers.

A combination of activities inside and surrounding the Green River Resource Area could result in future displacement of wildlife and lessening of use periods for livestock. If livestock numbers remain the same for the Resource Area, the impact from displaced wildlife should be minimal. The guidelines for vegetative management in riparian and upland areas should mitigate any impact to the vegetative resources. However, in concentrated area of surface disturbance livestock grazing could be impacted by limiting the length of time grazing is allowed on public lands or by decreasing livestock AUMs.

Minerals

Oil and Gas

Table 2-8 shows acres of ownership and development potential for each type of lease restriction. The application of a no leasing restriction would remove areas from potential opportunities for the exploration and/or development of oil and gas resources. Approximately 168,010 of these acres have high development potential, while 30,630 acres have moderate potential, and 199,070 acres have low development potential. These no leasing restrictions represent an approximate 121,360-acre increase in planning area lands covered by this restriction compared to Alternative A. This would increase the impact on oil and gas activities over existing management and result in fewer wells drilled (about 28 fewer wells than Alternative A).

The no surface occupancy restriction does allow the leasing of lands but would not allow occupancy of the surface for any exploration or development activity. No surface occupancy precludes drilling and exploratory activities in the areas designated. The application of no surface occupancy stipulations would affect 7,130 acres of land with high development potential, while 4,938 acres of moderate potential and 69,193 acres of low potential would be affected. No surface occupancy restrictions represent an approximate 31,360-acre decrease in planning area lands covered by this type of restriction compared to Alternative A. The effect of adding this stipulation to a lease would result in adding to the potential costs of drilling exploration and development wells by requiring relocation of well sites outside the restricted area and in some cases requiring the additional expense of pursuing directional drilling to access a reservoir. A large no surface occupancy area could preclude the development of the oil and gas resources; however, the likelihood of this occurring is very small.

Areas with seasonal restrictions would limit occupancy for certain periods of each year. These seasonal restrictions are applied to restrict any surface disturbing activity that would affect certain wildlife categories. The application of this stipulation to leases would affect 934,400 acres of land with high development potential, while 483,870 acres of moderate potential and 622,190 acres of low potential would be affected. These seasonal restrictions represent an approximate 367,370-acre decrease in planning area lands covered by this type of restriction compared to Alternative A. This decrease is due to dropping seasonal restrictions on high value lambing areas. Adding a seasonal stipulation to a lease would reduce the amount of time available that exploration, development, and production activities can occur in each year. Activity would be concentrated into shorter time periods, increasing costs to those developing the resource. However, where conditions exist for an exception to the

seasonal restriction to be applied, this effect could be greatly reduced or eliminated. Very rarely are timing limitation stipulations enforced for an entire time period, and are generally enforced only 2 out of 10 years for big game. However, a certain portion of the time period may be enforced every year, depending on the criteria set forth for granting exceptions. Generally, January, February, and March are the most crucial months when the big game timing limitation stipulation is enforced. If drilling is coordinated with BLM, an arrangement can generally be worked out.

The application of controlled surface use stipulations to leases would affect 541,320 acres of land with high development potential, while 180,250 acres of moderate potential and 533,850 acres of low potential would be affected (Table 2-8). These surface disturbance restrictions represent an approximate 245,130-acre increase in lands covered by this type of restriction compared to Alternative A. The effect of adding this type of stipulation to leases could result in increased costs of drilling to mitigate impacts or relocating to avoid the restriction.

The adverse impacts to oil and gas development would be greater than under existing management (Alternative A). In the planning area, 28 fewer wells would be drilled during the 1991 through 2010 time period. Of these 28 wells, 6 would have been located in the Nitchie Gulch special study area, while the other 22 would be scattered throughout the planning area. This would result in an estimated reduced production of 51,342 barrels of oil and 1,930,975,000 cubic feet of gas, over this period.

Benefits of production include: revenues from taxes that are returned to the state, severance and royalty payments that are paid to landowners, the state, and the federal government, and direct and indirect employment. These benefits are reduced from Alternatives A and B and slightly increased from Alternative C.

Restrictions in the area of high coalbed methane development potential would have the same impacts as for oil and gas development and would result in 50 fewer wells than under existing management.

The cost of geophysical activities would also be increased, with some activities being limited to certain times of the year or displaced from areas of conflict with other resource values. In some parts of the planning area, restrictions would limit the amount of seismic activity that can be performed. Detailed analysis of the potential restrictions would not be available prior to development of exploration programs. Impacts to geophysical activities would generally be increased over the present situation (Alternative A).

The availability of access for exploration, gathering lines, and pipeline capacity would be imperative to future development and transportation of clean-burning, affordable, natural gas as demand continues to expand. The designation of rights-of-way avoidance and exclusion areas, limiting major rights-of-way to only a few windows, and restrictions to protect conflicting uses could increase the cost of transporting Wyoming gas. This could place some producers and marketers at a competitive disadvantage. Wyoming would also be deprived of economic benefits that are important in supporting state and local government, schools, and highway construction. Impacts from these restrictions would be greater than for Alternatives A and B and would be slightly less than under Alternative C.

Coal

Mining operations would likely continue on those lands currently held under lease. Current mining operations are the Black Butte, Pit 22, Bridger, and Lion Coal mines. Interest has been expressed in leasing the Deadman Wash area, and mining could occur on these lands within the next 20 years. Map 3 shows areas where surface disturbance from coal mining is most likely to occur. Tables A12-1-1 through A12-1-9 and A12-1-15 (in Appendix 12-1) show the estimated annual coal production and surface disturbance for present operations and proposed lease applications. About 430.9 million tons of recoverable coal could be available. About 11.4 million tons of coal could be produced annually, causing an annual disturbance of about 500 acres. Present minable coal reserves would last beyond 20 years.

Some known coal areas may not be developed within the analysis period (Map 3). The impact would be a delay or a loss of development of over 200 million tons of known coal reserves. This would result in a royalty loss to the state and federal government and an economic loss to the local area. If existing mines decline in production without being replaced by new mines, coal mining in the planning area could cease within 25 to 30 years. Coal resource users (primarily electric utility companies and their customers) would be impacted.

Coal development would be impacted by restrictions placed on certain lands to protect wildlife areas, such as the greater Cooper Ridge, Elk Butte, and Deer Butte areas; cultural resources, including historic and prehistoric sites and sites of religious or spiritual concern to Native Americans; and special status plant species. Costs of mitigation in avoidance of these resources may preclude mining; thus, the coal resource may become uneconomic as an isolated coal body. This would be an economic cost to the local area and the state and federal governments.

Restrictions to protect visual, air, and water resources impact coal development by increasing costs of operations. Wetland areas would be managed to enhance other resource values, increasing coal development costs or leaving isolated unmined coal. Rights-of-way can impact the extraction of the coal resource by causing coal to be left unmined or by adding to operating costs due to mitigation. Increased operating costs can cause increased consumer costs or can cause abandonment of the operation as uneconomic.

Coal surface mining would be prohibited in some ACECs (20,775 acres). Coal resources that may occur within these areas would be lost to development where subsurface mining is not feasible.

Sodium/Trona

Generally, impacts to sodium development are created by constraints on related surface facilities. Thus, impacts to sodium development would occur from air, water, wildlife, cultural, and visual resource management prescriptions. These resource objectives would often increase the cost of sodium development and may inhibit some further development in the Known Sodium Leasing Area. Specifically, the number of facilities and their location may be relocated or even denied. Mining of the trona beds would remove the trona and production could average 6 million tons per year. Due to conventional underground mining methods, only about 50 percent of the trona in a particular bed can be removed.

Locatable Minerals

Additional withdrawals impact mineral location activities the most. Public land withdrawals bar a potential claimant from locating a mining claim on public lands. ACEC lands open to mining claim activity would affect the mining law program to a lesser extent. Potential claimants are not barred from locating mining claims, but any activity other than casual use requires a Plan of Operations and the posting of a bond. Approximately 281,900 acres of existing and proposed ACECs and 181,520 acres closed to ORVs would require this Plan of Operations.

About 3 million acres of existing withdrawals (oil shale and coal) would be revoked and would become available for mineral location, which would result in a benefit to mineral location activities.

Approximately 5,266 acres of existing withdrawals would continue to remain in effect and about 95,000 acres in the Flaming Gorge National Recreation Area would remain unavailable for mineral location. About 261,764 new acres would be withdrawn, resulting in up to 267,030 acres (or about 7.3 percent of the planning area) being withdrawn in the long term. Locatable minerals would not be developed in these areas but this effect would be offset by the large acreage of withdrawals to be revoked. Approximately 126,000 of the 267,030 acres are a part of the 3 million acres already withdrawn and no change in current management would occur in those areas, resulting in as much as 141,010 newly withdrawn acres that were previously open to mineral location.

Approximately 5,260 acres of the proposed South Pass Historic Landscape would be withdrawn and would affect mineral location. Withdrawal of these lands from mineral location would exclude them from any additional locatable minerals exploration and development, other than on claims already existing in this area at the time of withdrawal. The BLM has the option of pursuing validity exams on any such claims within this area. Should such claims be found to be invalid, they would be declared null and void on that basis (and should they be found valid, such claims could be mined and/or patented).

Management of the historic trails corridor (50,300 acres public lands) as a site on the National Register of Historic Places means that activities within the corridor must be in compliance with Section 106 of the National Historic Preservation Act, and activity could be delayed and development costs increased due to increased mitigation.

Mineral Materials

Opportunities for sales would be lost on about 245,342 acres (see Table 2-12). This is only a small portion of the planning area and should not significantly affect the availability of mineral materials area wide.

Areas of surface occupancy are the same as those listed in Table 2-8. This table also lists areas where surface disturbance is constrained. These no surface occupancy and controlled surface use areas would adversely impact the access to and use of mineral materials. While mineral material sales may not actually be prohibited in these areas, it is impractical to remove mineral materials from these areas without disturbing or occupying the surface in the process. Mitigation measures would increase the costs of doing business, limit timing of activities, and may preclude some activities.

The disposal of mineral materials from existing sites (i.e., community pits and other disposal sites) would eventually result in the depletion of these same sites, necessitating the establishment of new sites.

Moss rock resources in certain specific areas may be depleted from allowing moss rock common use. Topsoil resources would be conserved by not establishing topsoil sale areas. Allowing blowsand sale/common use areas should have a negligible impact on the total amount of sand resources in the planning area.

Summary

Within the Planning Area Only:

Oil and Gas Short-term and long-term effects would occur to mineral production and management by closing 397,710 acres to leasing (over 245,250 acres are nondiscretionary closures). No surface occupancy requirements and restrictions on surface disturbance would increase the costs of doing business and possibly preclude some activities.

Approximately 3.621 trillion cubic feet of gas and 128 million barrels of oil would be produced during the 1991 through 2010 time period. This production would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit, as described in the socioeconomic impact discussion.

The cumulative impact on the oil and gas resource would be a reduction of 127,620 acres available for oil and gas leasing, exploration and development compared to the No Action Alternative. Economic and market factors are the major controlling influences that determine the actual rate and extent of oil and gas exploration and development. Land use restrictions result in higher costs, and therefore influence to an unknown and variable degree the rate of resource exploration and development. No-lease areas remove potential resources from exploration and development consideration, as can some NSO stipulations if they block the perceived only feasible access route to a reservoir. This will eliminate from depletion/use potential resources which might lay beneath these lands. Somewhat lesser amounts of resource depletion will be found in the Proposed Plan than Alternative A, but more than Alternative C.

Coal Short-term and long-term effects would occur to coal leasing and development due to 12,600 acres determined unsuitable for leasing, 10,410 acres unacceptable for further leasing consideration, about 52,620 acres unacceptable for surface mining, approximately 11,860 acres limited for surface facilities, and over 135,800 acres subject to further mitigation and/or consultation, not including 112,920 acres of raptor habitat. Increased costs of mitigation would have short-term and long-term effects on coal production activities by increasing costs and limiting timing of development.

Approximately 324.85 million tons would be produced, which would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit, as described in the socioeconomic impact discussion.

Sodium/Trona Long-term benefits would occur with the entire area being open to leasing. However, short-term and long-term effects would occur through increased costs of mitigation.

Approximately 115 million tons of trona would be produced from within the planning area which would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit, as described in the socioeconomic impact discussion.

Locatable Minerals The Oil Shale Withdrawal would be revoked, with new withdrawals for other purposes being added. The overall reductions in total withdrawn area in all alternatives could lead to the development/use of previously undiscovered mineral resources within the next 20 years. Even if resource use does not occur, exploration for locatable mineral resources would occur almost immediately upon revocation of the Oil Shale Withdrawal because of changes in geological knowledge and technology that have taken place since the withdrawal was initiated. The potential for this to happen is greater than Alternatives A or C but less than B.

The increased costs of mitigation would also affect locatable mineral development. Additional requirements and mitigation for ACECs would increase costs of doing business for both short- and long-term periods.

Mineral Materials Increased costs of mitigation (including approximately 245,340 acres closed to salable minerals) would increase costs of doing business in both the short and long term. Some

unauthorized use would continue. Materials sold would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit, as described in the socioeconomic impact discussion.

Geophysical areas closed to geophysical activity result in a loss of data through the long term, and would be considered an unavoidable adverse impact. Increased costs for mitigation would affect operations in both the short and long term. Areas open to off-road vehicle use and exploration activity provide beneficial long-term effects because retrieval of information is allowed.

Considering the Expanded Impact Analysis Area:

Oil and Gas As with Alternative A, the cumulative impact on the oil and gas resource would be a greater or lesser depletion/use of that resource within the time frame of the plan, and the total preservation of some potential resources. Economic and market factors are the major controlling influences that determine the actual rate and extent of oil and gas exploration and development. Land use restrictions result in higher costs, and therefore influence to an unknown and variable degree the rate of resource exploration and development. No-lease areas remove potential resources from exploration and development consideration, as can some NSO stipulations if they block the perceived only feasible access route to a reservoir. This would eliminate from depletion/use potential resources which might lay beneath these restrictions. Somewhat lesser amounts of resource depletion will be found in this alternative than Alternative A, but more than Alternative C.

Coal The cumulative effects to coal would be the same as described for within the planning area. The coal potential area lies entirely within the Green River Resource Area boundary and is not affected by the expanded area.

Sodium/Trona Impacts to trona in the expanded area would be about the same as in the planning area. Approximately 16 million tons of trona would be produced per year from within the Known Sodium Leasing Area which would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit, as described in the socioeconomic impact discussion. Production from the new Wold mine could increase production in the area to 17.25 million tons per year.

Locatable Minerals The overall reductions in total withdrawn area in could lead to the development/use of previously undiscovered mineral resources within the time frame of the plan. Even if resource use does not occur, exploration for locatable mineral resources would occur almost immediately upon revocation of the Oil Shale Withdrawal because of changes in geological knowledge and technology that have taken place since the withdrawal was initiated. The potential for this to happen is greater than Alternative A. The increased costs of mitigation would also affect locatable mineral development. Additional requirements and mitigation for ACECs and areas closed to ORVs would increase costs of doing business for both the short and the long term.

Mineral Materials Additional sources of materials would be available over the expanded area. Increased costs of mitigation would increase costs of doing business in both the short and long term. Some unauthorized use would continue. Materials sold would be an irreversible irretrievable loss of the mineral resource but would provide an economic benefit, as described in the socioeconomic impact discussion.

Geophysical Areas closed to geophysical activity result in a loss of data through the long term, and would be considered an unavoidable adverse impact. Increased costs for mitigation would affect operations in both the short and long term. Areas open to vehicle use and exploration activity provide beneficial long-term effects because retrieval of information is allowed. Since most of the expanded area is accessible, the loss of data would be minimal and in localized areas and would not be significant.

Off-Road Vehicles

Under the Proposed Plan, impacts to off-road vehicle travel would occur from management prescriptions such as closing special status plant species locations, cultural sites, and Wilderness Study Areas to off-road vehicle use (about 181,930 acres). Off-road vehicle use in the Sand Dunes "open" area would be allowed on 10,500 acres. About 2,436,595 acres of the planning area would be limited to existing roads and trails; 1,006,335 acres would be limited to designated roads and trails; and 1,605,780 acres of existing and designated roads and trails would fall under seasonal closures (Table 4-1).

Timber harvesting activities have a tendency to shift the recreation opportunities in an area from semi-primitive motorized types of activities to those types of activities which occur in roaded natural settings. Hunting pressure generally increases due to increased road access, as do other off-road vehicle uses including recreational off-road vehicle use, firewood gathering, and similar activities. Most nonmotorized activities are reduced or displaced to other areas. The overall result is usually an increase in use and a change in the type of use.

The public lands in the following Special Management Areas would be partially closed or closed altogether to off-road vehicle travel (see Table 2-14), displacing off-road vehicle users. Additionally, transportation planning would be done in portions of these areas which could result in confining access and use to specified routes: special status plant species areas, Cedar Canyon ACEC, Currant Creek/Sage Creek, Greater Sand Dunes ACEC, Monument Valley Area, Natural Corrals ACEC, Oregon Buttes ACEC, Pine Springs ACEC, Pine Springs Expansion Area, Red Creek ACEC, Red Desert Watershed Area, Greater Red Creek area, and in White Mountain Petroglyphs ACEC. This amounts to about 6 percent of the planning area and would not be considered a significant effect to users.

Closing the road around the Boars Tusk would not adversely impact off-road vehicle use by displacing off-road vehicle users because there are alternative routes in the area.

Wild and scenic river management would have a slight adverse impact on off-road vehicle management because users would be displaced from these areas. However, with approximately 9.7 miles of rivers being found potentially suitable for designation and much of this area being currently inaccessible, this would not be a significant impact. The implementation of the proposed cultural resource management actions would impact off-road vehicle use by displacing users in these areas. Seasonal restrictions, reducing and restricting traffic, and limiting off-road vehicle use in certain areas may eliminate and displace users.

The implementation of the "limited to existing roads and trails" designation for public lands in the remainder of the area may pose conflicts in some areas; however, the density of existing roads and "two-track" trails provides access to essentially all of this planning area.

Preparing recreation area management plans, project plans, and providing off-road vehicle designations in the planning area would ensure that dispersed and developed recreation opportunities would continue.

Instituting seasonal closures of roads as required to protect resource values would adversely affect off-road vehicle use by displacing the users and, in some cases, would eliminate use.

Off-road vehicle use in the "open" area of the Sand Dunes (10,500 acres), the only open off-road vehicle play area in the planning area, would continue to benefit the off-road vehicle community and continue to increase in popularity. Use would continue to increase in the open area because most of the remainder of the planning area would either be limited to existing roads and trails or designated roads. A Recreation Activity Management Plan would address the issues (e.g., facility expansion and development and visitor safety), making the sand dunes a locally, and possibly nationally, significant off-road vehicle play area. ORV pressure from competitive events and casual use would continue to be a major management challenge. Off-road groups have submitted applications for hill climbs and cross-country races in the past and would continue to do so. These applications have been denied in the past due to conflicting resource values.

Summary

Within the Planning Area Only: Long-term beneficial effects would result from the large number of existing roads and trails available to the public for off-road vehicle use and access to public lands. The 10,500-acre open area allows the public to drive anywhere in the active sand dunes without much resource damage occurring. Additional areas closed to off-road vehicle use (less than 5 percent of public lands in the planning area) and those areas limited to designated roads and trails (about 9 percent of public lands in the planning area) would somewhat reduce usable areas for off-road vehicles and restrict off-road vehicle access.

Considering the Expanded Impact Analysis Area: Long-term beneficial affects would result from the large number of existing roads and trails available for vehicle use, and from newly constructed roads anticipated with additional development which would provide access to new areas. The areas closed or limited to designated roads and trails are small in comparison.

Recreation

Managing for the continued availability of outdoor recreational opportunities, meeting legal requirements for health and safety of visitors, and mitigating conflicts between different types of resource users would solve many of the current problems. Meeting the long-range needs of the public and utilization of recreation resources would be pursued.

Implementing the proposed cultural resource management actions would in most cases benefit the recreation program. Development of management plans, combined with emphasis on interpretive programs and historic features, would result in increased public awareness and use.

Managing timber resources to maintain current wildlife cover levels would benefit recreation by providing opportunities for consumptive and nonconsumptive recreation uses. Existing wildlife populations would be maintained, and an increase in hunter or recreation user days would be anticipated.

Recreation-related values would benefit by receiving a high level of priority in relation to protection when evaluating proposed rights-of-way and other realty actions. Public access needs and land exchanges for public benefit could be actively pursued and processed. This, combined with the continued protection of existing recreation resources through avoidance areas and restricted areas, would result in a higher level of use available for recreation purposes, fewer conflicts with landowners, and higher quality experience for the recreating public.

Allocating the portion of unallotted lands that are in riparian areas to wildlife and watershed would be beneficial to the recreation program. This would provide additional wildlife habitat, and potentially, additional recreation user days.

The identified livestock management actions which would improve vegetation cover and forage for wildlife and give consideration to wildlife, watershed, wild horses, and recreation resources in the development of new range improvements would benefit the recreation program.

The application of oil and gas leasing stipulations not allowing surface occupancy on developed recreation sites, and not allowing surface disturbing activities within ¼ mile of developed, semi-developed, and undeveloped recreation sites would benefit the users of those sites and retain site integrity. Implementation of these stipulations is essential to public safety and necessary for the protection of the sites.

There could be a serious health and safety issue pertaining to hunting as some of the oil and gas fields move to full field development. As more wells are developed per each section of land, the chance for bullets being fired into the facilities increases, creating a chance for an explosion, fire, or spill.

No surface occupancy in the 14-Mile recreation area (unless activities would enhance recreation management) would maintain the integrity of the area.

The application of surface disturbance mitigation to protect wildlife would also benefit recreation because the highest recreational uses in the area (hunting and fishing) are directly tied to wildlife resources. The identified protection of crucial big game winter ranges and sage grouse strutting grounds are essential to the protection of the wildlife populations, upon which much of the recreation use in the area is based.

The implementation of the proposed off-road vehicle restrictions would primarily impact recreational off-road vehicle uses and are discussed in the Off-Road Vehicle section. The impacts to other recreation uses are secondary and for the most part tied to wildlife populations. If big game populations are shown to increase due to establishing the identified off-road vehicle limitations, there may be increased hunter use and beneficial recreation impacts.

Limiting surface disturbing activities that could block access or use on or within ¼ mile of the Continental Divide Snowmobile Trail would maintain the integrity of the trail and allow for its continued use by snowmobiles.

Implementation of management plans for developed, semi-developed, and undeveloped recreation sites would ensure that other resource values are considered. Additionally, the plans would address health and safety issues while providing recreational opportunities for the public.

Implementing interpretive plans for the area's unique features, such as the Farson Fossil Fish beds, Boars Tusk, Leucite Hills, and Emmons Cone, would educate the public about diverse resources.

Developing backcountry byways would provide opportunities to interpret diverse resources.

The camping limit of 14 days may inconvenience some users. The limit would help to maintain the quality of the planning area for recreation. Closing crucial wildlife and livestock waters to camping may inconvenience some users but would assure protection of resources.

Special recreation permits and the accompanying mitigation would assure resource protection and public safety.

Management of the Continental Divide National Scenic Trail, Continental Divide Snowmobile Trail, the Green River, and the

Wind River Front as special recreation management areas would benefit recreation users. Recreation planning would help to reduce conflicts with other uses.

Not allowing new recreation sites to be developed in riparian areas would adversely impact recreation development potential. Restricting dispersed camping within a 200-foot zone in riparian areas would adversely impact some popular dispersed sites in the areas.

The improvement of wildlife habitat through vegetation treatment may lead to increased wildlife populations which in turn may result in additional hunter days and wildlife viewing opportunities. The proposed treatment for livestock management would also benefit wildlife and may result in a further increase in hunter days and wildlife viewing opportunities.

Hunter and angler days would essentially increase, which would be an important benefit to the local communities. The wildlife management actions identified conflict with off-road vehicle uses, but pose no conflicts with the other recreation programs.

Visual resource management changes would provide some benefit to the recreation program because the sensitive use areas would receive protection while still allowing for other appropriate uses to occur.

The identified actions to monitor and protect water quality would also benefit the recreation program by maintaining the high water quality in the area.

The addition of a wild horse viewing area in the planning area would greatly increase public awareness of that program and allow interpretation of other resource programs, including recreation.

Wind River Front

By not allowing mineral leasing and development in the eastern portion of the Wind River Front Special Recreation Management Area (88,510 acres), the rustic setting of the area would remain intact and the diverse recreational experience opportunities would remain high. Other resources such as riparian, vegetation, visual resource management, wildlife, and historic trails would remain intact.

The Wind River Front Special Recreation Management Area would benefit somewhat by applying strict management controls under the Proposed Plan. The eastern portion of the area would receive long-term protection of surface resources by restricting full mineral development. The visitors' opportunity to experience solitude and to interact with the natural environment would remain high. The setting of the area would remain predominantly unmodified.

The soils, slopes, and riparian/watershed values would benefit from precluding development activity. Big game populations would also benefit from recommended management actions, particularly in crucial winter ranges. Increased visitor use could adversely impact certain wildlife species by encroachment of their habitat. Increased numbers of visitors could also adversely impact some experiences being sought by other recreationists. Mineral material sales could have a slight adverse impact to the area if there is an increased interest in material sources and developing the western part of the area. Increased locatable mineral activity could adversely impact the scenic values of the area and the visitors opportunity to experience solitude. However, by withdrawing the Sweetwater River Campgrounds, the suitable part of the proposed Sweetwater Wild and Scenic River, and the location of the *Arabis pusilla* from the public land laws, including the mining laws, impacts to scenic values and to visitors would be reduced in these areas.

The Wind River Front has some of the highest recreational valued lands within the planning area. In the western portion, the visitors' experiences and settings would be adversely impacted from pipelines, access roads, and other facilities associated with mineral development. The area would be in jeopardy of losing its predominately unmodified natural environment and the users would be in jeopardy of losing the opportunity for isolation from the sights and sounds of humans.

The western portion of the area would be impacted mostly from mineral development such as oil and gas development. New access roads and other associated developments could increase human activity in the area. However, such actions as applying new management guidelines and restrictions on access roads, applying Controlled Surface Use requirements to surface disturbing activities, designing multiple wells and production facilities to occupy one disturbed site, and requiring remote control operations which would limit the amount of vehicle traffic, could alleviate some of the impacts to recreation users and wildlife populations. Developing a transportation plan and requiring new roads to be designed so they are not straight lines would help alleviate the visual eyesore of the "tunnel effect" that would occur. Requiring linear facilities to follow existing routes and previously disturbed areas would alleviate some of the surface disturbance and visual impacts. However, there would be some lost opportunities for mineral development, particularly fluid minerals, and costs of operating would increase.

Summary

Within the Planning Area Only: It is anticipated that recreation user days would increase by approximately 60 percent over the next 20 years due to the additional influx of people for anticipated mineral development and increased popularity of public lands for recreational activities.

Long-term benefits would occur to recreation users as additional facilities become available. Disruption of recreation opportunities in areas of development would occur both over the short and long term. This would be important to local users but probably not nationally significant.

Additionally, Wyoming's National Parks and Forests are reaching their maximum visitor carrying capacity (Recreation 2000). The Wyoming Travel Commission will be looking for BLM-administered lands on which to promote recreational activities. Adverse impacts to both developed and dispersed recreation sites could be anticipated with the increased use and visitor demands. Traditional users may be displaced from the increased use. With increased use and pressure on the recreation sites, some of the visitors' experiences may be adversely impacted. Developing oil and gas fields would affect the recreation uses and experiences in high recreation use areas such as the Wind River Front. Effects to areas adjacent to the Green River, the Adobe Town/Haystacks area, and the Greater Sand Dunes ACEC would be similar to those in described for the Wind River Front. See discussion for the western portion of the Wind River Front.

It is anticipated that as developments occur, populations increase, and other traditional recreation use areas become saturated, more demands will continue to be placed on recreation sites and facilities in the planning area. Although recreation users would benefit from access to non-traditional use areas, the integrity of setting and the opportunity for unconfined and solitary recreation experiences would diminish.

Considering the Expanded Impact Analysis Area: In addition to the impacts identified within the planning area, recreation demand and uses could increase to a point where conflicts would occur for unconfined dispersed recreation opportunities. However, management prescriptions would mitigate these impacts somewhat, to lessen the effects identified in Alternative A.

Socioeconomics

The Proposed Plan has a total direct output value for the 20-year period for the estimated oil, gas, coal, and trona of $19.5 billion. This total direct output value includes severance tax payments of $0.9 billion, ad valorem taxes of $1.0 billion, and Wyoming's share of Federal royalty of $0.6 billion for a total of nearly $2.5 billion to the state, county, other local governments, and schools (Appendix 10). Related socioeconomic tables are located in Appendix 10. Other economic tables, graphs, and charts which were used for the analysis in the document are on file at the Green River Resource Office.

Livestock

Annual Perspective

Annual grazing fee receipts realized by the BLM under the Proposed Plan from AUMs actually utilized by livestock operators would amount to between $336,870 and $374,300. If it were possible to utilize the total 318,647 AUMs of active preference (Alternative B), annual grazing fee receipts to BLM would total over $596,000.

The BLM-administered land accounts for about 95 percent (302,715 AUMs) of the area's active preference AUMs on federal lands. The remaining 5 percent are administered by the Bureau of Reclamation. Therefore, 95 percent of all of the personal income, sector and area output, and employment figures relating to federal lands are the result of grazing on BLM-administered lands within the resource area.

It is estimated for the Proposed Plan that annual direct personal income to livestock sector households would total approximately $1.6 million per year, at current 180,000 AUM use levels. If the use of total active preference could occur, this figure could rise to over $2.75 million.

Total Area personal income (direct, indirect, and induced) is increased by activities in the livestock sector. It is estimated that total annual Area personal income would be enhanced by approximately $5.4 million because of livestock sector activities at current use levels. Should the use of total active preference AUMs be possible, total Area personal income would benefit by over $9.6 million.

The direct value of livestock sector yearly output in the Area would total over $10.5 million. If total active preference were utilized, it would be close to $19 million.

Subsequently, the value of total annual Area output (direct, indirect, and induced) would benefit by approximately $30 million because of livestock sector activities. If it were possible to graze all active preference AUMs, the benefit might increase to about $53 million.

Annual direct employment in the livestock sector is estimated to be about 276 to 306 full-time equivalents (FTEs). This sector would increase total annual area employment (direct, indirect, and induced) by about 584 to 649 FTEs. Should all active preference AUMs be utilized, direct employment in the livestock sector might reach 488 FTEs and total area employment might benefit by about 1,034 FTEs.

Summary

Over the 20 years, direct output value from livestock produced as the result of grazing public land in the resource area would range from about $211 million (assuming current use levels) to $374 million under the maximum AUM use assumption.

The benefit to total area output from activities related to grazing on public land in the resource area is estimated to range from $597 million (assuming current AUM use levels) to over $1 billion at maximum AUM use levels.

Impacts on total area income over the next 20 years is expected to range from $104 million (assuming current AUM use levels) to $183 million given maximum AUM use.

The annual economic impacts listed above result in the following cumulative impacts over the next 20 years:

AUM USE LEVEL	180,000	200,000	318,647
AFFECTED ITEMS			
Grazing Fees ($1,000)	6,737	7,486	11,947
Direct Personal Income (million $)	31	35	55
Total Area Personal Income (million $)	104	115	183
Direct Output (million $)	211	235	374
Total Area Output (million $)	597	662	1,055

Recreation

Comparing 2010 to 1990 and Alternative A

Under the Proposed Plan, annual recreation day levels would rise by about 12,734 days each year. By the year 2010, annual recreation days are projected to total 651,845, valued at over $45.75 million per year. This is about 280,106 recreation days and almost $31.7 million per year higher than is estimated for 1990, or for Alternative A in year 2010. The value of total annual Area output (direct, indirect, and induced) could benefit by almost $93.99 million per year and is about $63.48 million more than would be realized under Alternative A.

Direct annual income from recreation is estimated to total almost $15.26 million in 2010, which is about $10.36 million higher than is estimated for Alternative A. Estimated total annual Area income (direct, indirect, and induced) resulting from Area recreation in 2010, could total almost $23.65 million, about $15.97 million higher than under Alternative A.

Direct employment by the recreation sector in the resource area in 2010 is projected to total about 1,761 FTEs, about 1,190 FTEs more than under Alternative A. Total (direct, indirect, and induced) Area employment, resulting from resource area recreation in 2010, could reach about 2,451 FTEs, up about 1,655 FTEs above estimates for current management.

Summary

Over the 20 years reviewed, direct recreation expenditures under the Proposed Plan could have a cumulative value of about $390.50 million, about $93.53 million higher than expenditures under Alternative A. Total cumulative output (direct, indirect, and induced) realized by the Area from recreation during this time is estimated to total about $802.26 million, almost $192.16 million greater than under Alternative A.

Direct cumulative recreation income over the 20 years is projected to total almost $130.29 million, which is about $31.21 million higher than is estimated for Alternative A. Total Area income (direct, indirect, and induced) could be enhanced by recreation over the 20 years by about $201.85 million. This is about $48.35 million more than would probably be realized under Alternative A.

Timber

Annual Perspective

Under the Proposed Plan, the direct annual output value of the proposed annual timber harvest of 500,000 board feet could range from $87,500 to $110,000. The benefits to total (direct, indirect, and induced) annual area output from harvests could total between $210,800 and $265,000.

Direct annual income to the timber sector as the result of the maximum harvest level is estimated to range from $19,700 to $24,700. Benefits to total (direct, indirect, and induced) area income from harvesting activities are estimated to amount to between $46,000 and almost $58,000.

Timber activities would result in about one additional FTE being employed directly by the timber sector, and in total (counting direct employment), about three additional FTEs being hired throughout the area.

Sodium/Trona

Annual trona production is estimated to be about 5 million tons from 1991 through 1995 (Appendix 10). However, in 1995, annual output would rise to 6 million tons and remain at this level through 2010. The cumulative value of output production for the 20 years 1991-2010 would total almost $5.1 billion. The total economic output (direct, indirect, and induced) in the area is increased by the trona/soda ash production by approximately $9.2 billion over the 20 years (see Appendix 10).

Employment related to trona production would probably rise somewhat. Since trona output is projected to rise by about 20 percent beginning in 1996, it is estimated that subsequent annual direct employment by the industry could rise by over 100 FTE and this, in turn, could result in some additional indirect and induced employment in the planning area.

Oil and Gas

Annual Perspective

Under the assumptions for oil and gas, output does not vary greatly among the Proposed Plan, Alternative A, and Alternative C. For all of these alternatives, highest output for oil and gas during the 20 years covered by the analysis is projected to occur in 1996 (Table A12-16).

Of these three alternatives, Alternative A is expected to produce the highest annual output of oil over the 20-year period. Under Alternative A, the 1996 oil output is projected to reach about 6,940,890 barrels, valued at over $139 million. In 1996, the Proposed Plan is projected to produce 6,923,961 barrels of oil with a direct output value of approximately $138 million.

Under Alternative A, 1996 gas production is expected to total almost 193.6 billion cubic feet, valued at about $309.8 million. By comparison, 1996 gas production under the Proposed Plan is projected at 195.8 billion cubic feet with a direct output value of approximately $313 million.

Under the Proposed Plan, oil and gas output are projected to trend downward after the 1996 high point. By the year 2010, direct output value for oil is estimated to be $101.2 million and gas direct output value is estimated to be $249.2 million.

Under the Proposed Plan, impacts from total 1996 area output (direct, indirect, and induced) resulting from oil production would be about $208 million. This benefit to total area output would decline to about $152 million in 2010. Impacts to total 1996 area output resulting from gas production is expected to amount to about $472 million. By 2010, this annual economic impact from gas production would decline to about $375 million.

Under the Proposed Plan, direct income in the oil sector is projected to total approximately $11.4 million in 1996, dropping to $8.3 million by 2010. Benefits to total area income (direct, indirect, and induced) from oil output is expected to amount to about $23 million in 1996 and about $17 million in 2010.

Under the Proposed Plan, direct income produced by the gas sector is estimated to be almost $26 million in 1996, declining to slightly over $20 million by 2010. Subsequently, total income effects for the area from gas production could be over $52 million in 1996, declining to less than $42 million by 2010.

Annual direct employment related to the oil and gas activities would peak at about 500 FTE in 1996 and decline to 428 in 2010. Total employment (direct, indirect, and induced) in the area resulting from oil and gas activities would peak at about 1,732 in 1996 and decline to around 1,482 in 2010.

Summary

Cumulative oil output over the 20 years for the Proposed Plan, and Alternatives A and C is projected to be about 128 million barrels. Corresponding direct output values are expected to be about $2.552 billion. The subsequent impacts on total area output value are projected to be approximately $3.843 billion.

Gas output over this same time period is estimated to total 3,621 billion cubic feet under the Proposed Plan. Corresponding direct output values are projected to be about $5.794 billion. Subsequent impacts on total area output could amount to over $8.726 billion.

Cumulative direct income in the oil sector over the 20 years is expected to be $209 million. Total income (direct, indirect, and induced) generated in the area as the result of oil activities over the 20 years is expected to be $427 million.

Cumulative direct income from the gas sector over this time period is estimated to be about $476 million. Total income generated in the area as the result of gas activities over the 20 years could total about $970 million.

Coal

Annual Perspective

Under both the Proposed Plan and Alternative A, the combined annual output from all active mines in the Green River Resource Area could rise from about 11.9 million tons in the base year (1990) to a high of 18.4 million in the year 2005. Output is expected to total 12.8 million tons in 2010.

The direct annual output value from mine operations and related coal sales are expected to reach a peak in 2005 of more than $340 million, compared to an estimated $212 million in 1990. By 2010 this direct output value is projected to decline to approximately $237 million. Coal output sales are estimated to add almost $611 million to total (direct, indirect, and induced) area output in 2005, compared to almost $381 million in 1990. By 2010, the contribution of area coal activity to total annual area output is expected to decline to slightly more than $425 million.

Direct personal income realized by coal sector households from resource area coal operations is estimated to have been about $38 million in 1990. Such income is expected to rise to over $60 million by 2005, and then decline to $42 million by 2010. Total personal income (direct plus indirect and induced) gained by households as

the result of resource area coal activities is estimated to have been over $68 million in 1990. Under these alternatives, it is expected to rise to almost $110 million by 2005, but by 2010 to total over $76 million.

According to reports by the Wyoming State Inspector of Mines, direct employment by resource area coal mines in 1990 totaled about 939 FTEs. The estimated impact of resource area coal mining activities on total (direct plus indirect and induced) area employment numbers in 1990 was about 2,442 FTEs (University of Wyoming, Input/Output Model). When resource area coal activity is at its peak in 2005, direct employment is projected to rise to 1,286 FTEs, and total area employment (direct, indirect, and induced) is expected to benefit by 3,345 FTEs. By 2010, direct area coal sector employment is expected to be only 1,036 FTEs and total area employment should benefit by almost 2,695 FTEs.

Summary

Under these alternatives, cumulative coal output of resource area mines over the next 20 years is expected to be about 325 million tons, with a direct sales value of approximately $6 billion. This level of coal output/value could raise total (direct, indirect, and induced) output by almost $10.8 billion over the 20 years.

Direct coal sector household income is projected to benefit by about $1 billion over the 20 years and total area household income (direct plus indirect and induced) by almost $1.9 billion as the result of projected coal activities.

General Summary

Within the Planning Area Only: The Proposed Plan has a total direct output value for the 20-year period for the estimated oil, gas, coal, and trona of $19.5 billion with a cumulative economic output of $32.5 billion. This translates into severance tax payments of $0.9 billion, ad valorem taxes of $1.0 billion, and Wyoming's share of Federal royalty of $0.6 billion for a total of nearly $2.5 billion to the state, county, other local governments, and schools (Appendix 10). Increase in employment would be important regionally, and would have a positive impact on social well being in individual cases.

Considering the Expanded Impact Analysis Area: Activities occurring today would be expected to continue in the future. There would be some increases in mineral production in the short term leading to a slight decline in the long term as older wells and mines cease producing and are abandoned. Initiation of new drilling activities and mining activity could create a boom type situation in the communities of Rock Springs and Green River (particularly since many goods and services are provided from these communities for the cumulative area) in that demands on housing and schools would increase for the development period. This is not anticipated to be as extreme as it was in the mid-1970s because there are now some facilities in place that were not available during the previous boom. These include recreation facilities, new schools, and new water and sewer lines. Businesses are likely to increase their staffing to facilitate demands in the area.

No specific information on attitudes toward this Proposed Plan has been collected. However, based on attitudes toward specific issues (see Public Participation in Chapter 5), people who are concerned with increased soil and watershed protection, enhancement of cultural and historical features, wildlife habitat enhancement, increased recreation access, and development and control over ORVs may feel their concerns are partially addressed. Those concerned with maximizing opportunities for mineral and energy exploration and development may feel their issues are not adequately addressed. Those interested in enhancing livestock grazing may be concerned by the possible decrease in use periods and new restrictions on grazing although some of these concerns may be offset by new range improvements.

Special Status Plant Species

Factors that adversely affect air quality (e.g., emissions from industrial sites, airborne particulate, etc.) may also affect special status plant species, especially if source areas are located near, upwind, or adjacent to actual plant locations or potential habitat areas.

Generally, mitigation and management actions associated with cultural and paleontological resource management would benefit and protect special status plant locations and potential habitat areas. Limitations imposed within the visual horizon of designated and nondesignated historic roads and trails would benefit and protect special status plant species locations and potential habitat areas. Management actions imposed to protect sensitive cultural values would benefit and protect precocious milkvetch (*Astragalus proimanthus*) locations and potential habitat.

While most special status plant species locations and potential habitat areas are generally not dependent on fire, these ecosystems have a low priority for prescribed burns. Actions implemented to confine, control, and/or contain wildfires and prescribed burns (fire line construction, driving, and backfires) could damage or remove actual plants and severely impact potential habitat. In addition, fire itself could remove plants or alter potential habitat. Off-road vehicle use for wildfire suppression activities would be limited to existing roads and trails in actual special status plant species locations and potential habitat areas; therefore, impacts to plant species would be insignificant.

Management activities implemented on commercial, noncommercial, and woodland forests would have no impact to special status plant species or potential habitat areas.

Industrial activity in the vicinity of special status plants could increase the risk of introducing hazardous materials on these plants and their habitat through spills or unauthorized dumping.

Identified land disposal would have no impact to special status plant species populations or potential habitat areas. Acquisition of 1,920 acres of non-federal land that supports *Descurainia torulosa* would have beneficial impacts to existing populations and potential habitat areas. Pursuit of withdrawals in actual special status plant species locations would prevent impact to special status plant species from mining activity. Management of actual special status plant species locations as right-of-way avoidance areas and potential habitat areas as special status plant species survey areas would ensure no damage would occur to special status plant species populations due to issuance of rights-of-way and permits.

Management prescriptions, including no surface occupancy requirements in actual plant locations, would prevent impacts to special status plant species from range improvement projects such as wells, reservoirs, and fences. Salting stations or other apparatus that concentrate livestock activity could damage or remove any of the special status plant species. With present livestock numbers, there seems to be little, if any, impact to special status plant species locations or potential habitat from livestock grazing. Meadow pussytoes (*Antennaria arcuata*) actually seems to thrive in grazed meadows, although the association between population densities and livestock grazing is not fully understood. If livestock numbers were increased to the full authorized level, animals would be forced to use areas not presently grazed and special status plant species could be impacted.

Conversions from cattle to sheep could alter grazing patterns and forage preference. Special status plant species locations and potential habitat could be impacted by such management actions.

Chemical control of noxious weeds could impact special status plant species populations. Control of thistle in the wet meadows around and near South Pass could remove or severely alter existing populations of meadow pussytoes.

Special status plant species locations would be closed to mineral material sales, surface disturbance, and geophysical vehicles. These actions would prevent damage to plant populations already inventoried. Plant and habitat searches would be conducted and, if plants are found, avoidance would be designated, prior to geophysical activity or surface disturbance; therefore, there would also be no impact to special status plants in areas that have not been inventoried.

Actual plant locations (about 3,610 acres) would be closed to off-road vehicles, and off-road vehicle use in potential habitat areas would be limited to existing roads and trails; therefore, in theory, there would be no impact to special status plant species populations. But, unauthorized off-road vehicle use does occur and could impact current populations and potential habitat. Increased recreational use in the Pine Creek exclosure could impact small rockcress (*Arabis pusilla*). Increased recreational activity on Quaking Aspen Mountain is considered a threat to *Descurainia torulosa*. Expansion of the telecommunication facility on Quaking Aspen Mountain may also adversely affect this species.

Trampling by wild horses has been listed as a threat to existing populations of large fruited bladderpod (*Lesquerella macrocarpa*); however, potential impacts appear to be minimal.

Management actions described to protect visual quality, watershed values, wilderness areas, wild and scenic rivers, wildlife habitat, and special management areas would generally benefit or not impact special status plant species populations or potential habitat.

Management actions that prevent species from being listed as T&E species would benefit all parties. T&E species are more universally protected, and private or other agency administered lands could be affected. Prevention of listing would therefore be beneficial to all parties.

Summary

Within the Planning Area Only: Activities such as wildfire suppression, salting or areas where livestock concentrate, chemical control of noxious weeds, geophysical activity in potential habitat areas, off-road vehicle use, increased recreation use, trampling by wild horses, and conversions of sheep to cattle could contribute to an irreversible irretrievable loss of the plant populations. However, restrictions on wildfire suppression, geophysical activity, and off-road vehicle use would reduce the level of impact. Activity on existing mining claims and unauthorized uses could result in an irretrievable loss of plant populations and habitat. Withdrawing the 3,610 acres with known special status plant species populations or habitat from new mining claims and mineral material sales would reduce the level of impact.

Considering the Expanded Impact Analysis Area: Development activities, such as those associated with recreation sites and minerals actions, could have an impact on Special Status (Candidate) Plant species in areas where several different resource concerns may limit options for placement of mineral development facilities. However, increased inventory for these species in areas projected for development could provide more information about rare plant species and their status.

Grandfathered mining claims and unauthorized uses could impact these species through unavoidable surface disturbance. Mineral location activities and the use of explosives on Special Status Plant habitat would cause removal and irretrievable loss of plants. However, impacts from future mineral location activities would be minimal.

Intensive development associated with the expansion area could cause greater impacts to Special Status Plant species because of more conflicting demands on the land and its resources. Although avoidance is the preferred form of mitigation, avoidance of Special Status Plant populations would become increasingly difficult with more concentrated levels of mineral developments and associated activities, potentially leading to listing these species as Threatened or Endangered.

Vegetation

Management actions implemented to control dust along dirt roads would permit vegetation to be more productive and vigorous. Selective requirements imposed on prescribed burns in order to avoid violation of ambient air quality standards could increase burn costs and alter prescribed burn plans. Industrial plant stack emissions could alter plant communities in the immediate vicinity and downwind from the emission source.

Generally, stipulations and management actions implemented to protect cultural and paleontological resources would prevent surface disturbance and vegetation removal. Limitations imposed within the visual horizon of designated and nondesignated historic trails could alter areas considered for prescribed burning and range improvement construction thereby facilitating localized overuse of vegetation due to poor livestock distribution. Concentrated invertebrate and vertebrate fossil collection causes surface disturbance and results in removal of vegetation from those areas.

Prescribed burning would cause a long-term decrease in shrub species, a short-term increase in annual weeds, and a long-term increase in grass species on approximately 67,700 acres. Total vegetative production would decline for the first two growing seasons following a prescribed burn. After the second year, livestock and certain wildlife (elk) forage would increase, and range condition and total forage production would improve in the third year after a prescribed burn. Prescribed burns in decadent aspen stands would, with proper grazing management, stimulate sprouting and reproduction of aspen and alter age class structure. Prescribed burns conducted during the hot season or during low soil moisture conditions would limit sprouting and regeneration of certain mountain shrub species, primarily antelope bitterbrush, and could cause less diverse species composition and longer post-burn recovery periods. Cool season burns or burns conducted during periods of high soil moisture would provide greater opportunity for mountain shrub regeneration and sprouting, and would provide greater species diversity and shorter recovery periods.

Wildfires cause a short-term loss of vegetation and livestock forage on rangelands. Within three years, livestock and wildlife forage would generally exceed original levels as grasses and forbs replace shrubs. The surface disturbance associated with fire line construction, the use of heavy equipment, and other fire suppression activity often damages or destroys vegetation and accelerates natural soil erosion. In forested areas, wildfire changes the vegetative composition from forest to the open grass/shrub type. Wildfires usually occur on the high and low density sagebrush, juniper, conifer, and aspen as shown on the LANDSAT classifications.

Management actions described for commercial forest lands, especially along the Wind River Front, would reduce age class structure and plant species diversity. Construction of access roads to timber sales would remove vegetation for at least 3 years unless the road is used by the public, in which case vegetation would be

permanently removed. Forest management activities in commercial stands would generally be limited to the conifer LANDSAT classification. Management on woodland and commercial forests in the Little and Pine Mountain compartments would generally have no detrimental effects to vegetative communities and would improve plant species diversity, health, vigor, and age class structure.

Generally, hazardous waste management activities would not impact vegetative resources, although illegal hazardous waste dumping or spills could damage or totally remove vegetation from the immediate vicinity of the dump or spill.

With the exception of desert land entries, most of the impacts to vegetation from lands and realty actions are covered under impacts to livestock grazing in terms of forage (AUMs) lost. Farming activity associated with desert land entry would cause vegetation to be replaced by irrigated crops or hay. Crop production would change vegetative composition and would involve such activities as tilling the soil, seeding crops, irrigating, applying fertilizers, herbicides, and insecticides, and harvesting. Desert land entries would generally occur on the saltbush, low density sagebrush, greasewood, and high density sagebrush LANDSAT classifications.

The possible sale of public land would generally result in the loss of vegetative resources as most disposals would be in support of urban and industrial expansion. No significant rare plants are known to exist on lands identified as potentially suitable for disposal. Any significant vegetative resources on these lands would probably be discovered in site specific investigations that would be conducted during evaluation of sale proposals. In such cases, effects on vegetation would be mitigated by appropriate wording in the patent, or the sale would be denied if necessary.

At current livestock use levels of 180,000 AUMs, some localized overuse of forage would continue, primarily in riparian zones. Localized overuse of forage can result when an area is grazed by too many animals or for too long a time. When forage is overused, plants cannot provide for their own growth, maintenance, and reproduction, so they are eventually replaced by less desirable species, many of which produce little or no forage value. If livestock use levels increase to active preference of 318,641 AUMs over the next 20 years, more widespread overuse of forage could be expected in riparian areas as well as on uplands. Range conditions and trend could be expected to decline and less desirable plant species would increase.

The vegetation types that would be most affected by livestock grazing would include the saltbush, low density sagebrush, high density sagebrush, aspen, riparian, and greasewood classifications.

Rangeland project construction and implementation would remove vegetation from 105 acres which could be expected to rehabilitate after 20 years. Water developments, including wells, springs, and pipelines should improve livestock and wild horse distribution patterns, encouraging more uniform utilization of forage and causing less damage to certain vegetation types. Reduced grazing pressure would reduce vegetation damage, soil compaction, and erosion. Project construction would be most prevalent in the low density sagebrush, high density sagebrush, greasewood, and riparian LANDSAT classification areas. Mechanical manipulation of vegetation (chaining, chemicals, contour furrowing, ripping, etc.) has not been identified but has not been ruled out. These activities would result in a change in vegetation composition and would temporarily remove target species. Chemicals used to remove sagebrush and noxious weeds could impact nontarget vegetation on localized areas.

Fencing would be used to improve forage and habitat condition on upland and wetland sites. Range condition should improve on localized areas where fences are used to implement AMPs or better distribute livestock. In wetlands, fencing would control livestock use and improve habitat and watershed condition. More diverse vegetation would be produced and soil erosion would be reduced.

Management to achieve proper functioning condition on 75 percent of riparian areas would benefit vegetation and lead to healthier, more diverse, and larger riparian plant communities. Limitation of utilization by livestock would benefit riparian vegetation.

Livestock conversions from sheep to cattle would generally cause additional utilization of riparian vegetation. Conversions from cattle to sheep would generally result in greater utilization of upland areas and shrub species.

Allocation of unallotted forage would open new areas to livestock grazing and forage utilization. Increased utilization could result in species composition changes or a decrease in vegetative production and vigor.

Impacts to vegetation due to mineral activity are generally expressed in terms of AUMs lost or temporarily removed pending reclamation. Construction of drill pads, roads, facilities, pipelines, powerlines, and other structures associated with oil and gas operations would result in the loss or removal of vegetation from 24,310 acres over the next 20 years. Reclamation of disturbed sites would be accomplished on approximately 14,325 acres; therefore, total net loss of vegetation is expected to be approximately 9,985 acres over the next 20 years (Table 4-1).

Activities associated with coalbed methane projects are expected to remove vegetation from approximately 3,150 acres over the next 10 years. Reclamation of disturbed sites is expected to occur on approximately 1,927 acres; therefore, there would be a net long-term loss of vegetation from approximately 1,223 acres.

Coal mining at the Bridger, Deadman Wash, Black Butte, Elk Butte, Pilot Butte, and Lion Coal Mines is expected to remove vegetation from approximately 27,558 acres over the next 20 years. Reclamation of disturbed sites is expected to occur on approximately 17,940 acres; therefore, there would be a net long-term loss of vegetation of approximately 9,618 acres. Reclamation efforts would not return impacted vegetative communities to a natural state for several decades.

Vegetation would be disturbed by activities associated with mining of other leasables, salables, and locatables. In most cases, only a small acreage would be disturbed.

Geophysical exploration activities would usually disturb less than one acre of vegetation per mile of operation. All new disturbance would be reclaimed after exploration.

Repeated off-road vehicle use would damage vegetation because off-road vehicle tires crush and tear plant tissues and eventually destroy plant cover. Off-road vehicle activity often occurs in areas that are too steep or erosive for road construction. The combination of vegetation loss and activity on steep erosive soils produces excessive soil erosion and causes further impacts associated with sedimentation on adjacent areas. All vegetation classifications would be damaged by off-road vehicle use, but such damage would be most common on badlands, high and low density sagebrush, juniper, saltbush, and sand dune LANDSAT classifications.

Recreation area support facility construction would remove vegetation. Concentrated recreational activities, especially around and near riparian areas, can damage vegetation through trampling, digging, cutting, or pulling. Off-road vehicle rallies, cross country races, and other such events would damage or totally remove vegetation from the event route.

Management actions implemented to protect special status plant species populations and potential habitat areas would generally protect other vegetative resources.

Management actions described to protect visual qualities, wild and scenic rivers, special management areas, wildlife habitat, watershed values and to reduce channel erosion would generally benefit and protect native vegetative communities. Some short-term disturbance of vegetation could be expected due to construction of wildlife habitat and watershed improvement projects.

Proposed wild horse numbers would be managed at a level that would not adversely affect vegetation. However, continued concentration of wild horses near water sources could severely damage vegetation in localized areas through trampling, trailing, and overgrazing. Promotion of wild horse grazing in dry areas through the development of 15 water sources would reduce localized overgrazing and trampling of vegetation, but would remove vegetation from approximately 23 acres and facilitate grazing of vegetation currently not available for horse use. Designation of the Little Colorado Desert as a wild horse herd area with an AML of 69 to 100 animals would not have a significant impact to vegetation because the horses are currently there and most allotments have large amounts of nonuse.

Summary

Within the Planning Area Only: There would be a short-term increase of annual weeds and a short-term decrease in vegetation production on the 67,700 acres proposed for prescribed burns. However, there would be a long-term increase in grass species and vegetation production. Wildfire would create a similar effect for both the short and long term. The effects of wildlife on vegetation are not anticipated to be significant.

Localized overuse of forage would continue and could increase if full livestock grazing preference is achieved. Riparian areas should improve over the long term.

A short-term impact would occur from the construction of rangeland improvement projects removing vegetation (about 105 acres); however, a long-term benefit to overall vegetation production, through improved distribution, would occur.

Land disposal would result in an irreversible and irretrievable loss of the vegetation resource as most disposals are for urban expansion or industrial development.

Management actions proposed for the next 20 years would remove vegetation from an additional 55,523 acres. In total, vegetation production would be affected on 95,941 acres. During the next 20 years, an estimated 41,192 acres would be reclaimed. After reclamation, roughly 54,749 acres would be disturbed for the long term.

Damage due to off-road vehicle use would be less that than that under Alternative A or B due to the closure of additional acreage to off-road vehicle use, and transportation planning being accomplished on additional areas. About 28 percent of the area would be managed to direct off-road vehicle use to specific roads and trails, or closed to off-road vehicle use.

Considering the Expanded Impact Analysis Area: Vegetation and habitat quality would improve in some areas. However, more surface disturbance from development, recreational, and ORV activities would occur. Impacts could become more severe when high intensity development occurs over broader areas. One result could be a reduction in forage availability and, consequently, livestock and wildlife use.

Visual Resources

The initiation of a program to improve the visual quality of the oil fields would benefit the visual resources in those areas and, in many cases, would benefit other resources such as soil, watershed, and vegetation. The avoidance of identified areas not suitable for linear rights-of-way would protect the sensitive visual resources in these areas.

Protecting National Historic Trails and other trails by not allowing visual disturbance, by applying no surface occupancy constraints to important cultural sites, and limiting geophysical vehicles to designated roads and trails in the South Pass Historic Landscape would enhance visual values and protect the visual sensitivity of these resources and areas.

Actions such as maintaining, improving, or restoring riparian values to provide enhanced forage, habitat, and stream quality; managing forest lands for watershed, wildlife, and scenic values would benefit visual values and, in some areas, improve the management.

Vegetation treatment prescriptions such as limitation of treatment unit size within VRM Class II areas would enhance visual resources. Maintaining vegetative buffer strips between developed recreational facilities and live water would have a beneficial effect to visual resources. Limiting surface disturbing activities around recreation sites near riparian areas would also enhance visual resources.

Not allowing surface mining activities and surface occupancy areas around the Boars Tusk and the Steamboat Mountain - Killpecker Dune fields would retain and enhance visual resources found in those areas.

In designated special management areas, such as ACECs, a plan of operations is required for any surface disturbance activities, regardless of acreage. This would help maintain visual resources by ensuring effects to visual resources are mitigated. About 104,900 acres or 3 percent of the planning area would be provided these benefits to visual values.

Establishing a "greenbelt" along the Green River would enhance visual resources along the river.

About 63 percent of the planning area (2,250,000 acres) would be managed consistent with the Class IV visual resource management classification. Modification to the landscape could be dominant. Visual resources would not be protected on this area. This could result in a loss of visual resources. However, every effort and opportunity would be taken to screen and paint facilities to blend in with the natural landscape and minimize these impacts.

Management of BLM-administered lands in accordance with visual standards to protect, maintain, enhance, and rehabilitate areas would enhance visual resources.

Recommending approximately 9.7 miles of the Sweetwater River as suitable for inclusion in the wild and scenic river system would maintain the integrity of the visual values for the area. Management prescriptions for the Big Sandy River segments would protect scenic values within ¼ mile of the centerline of river corridors.

The off-road vehicle designation of the majority of the planning area as "limited to existing roads and trails" would be compatible with the visual designations, and in some cases, would prevent the degradation of the visual quality resulting from new disturbance and roads.

Viewshed aesthetics and resources would be affected by fire, timber harvest activities, and lands and realty actions in the short term. Natural, human-caused, or prescribed fires would detract from visual resources. Timber harvesting, clear cuts, and related road construction would also detract from visual resources. These would be short-term impacts.

Rights-of-way, particularly pipelines and roads, can have long-term effects to visual resources due to the time frames necessary to re-establish vegetation cover, and the straight line route these actions follow. Therefore, visual resources would always have to be analyzed and appropriate mitigation applied before any of these activities would be allowed.

Sand and gravel, mining operations, and oil and gas development impact visual resources with related surface disturbing activities and surface facilities. In Class II areas, an analysis of actions would be concluded before a proposal can be undertaken. Project design must provide conformance with VRM Class II objectives, lessening adverse effects to visual values. Old oil and gas fields would continue to be an eyesore and retain a "rehabilitation area" visual management prescription.

Summary

Within the Planning Area Only: Long-term benefits would result from improvement and rehabilitation of area resources and application of management prescriptions for Class II visual resource management areas. Linear facilities such as roads and pipelines would have a long-term effect on visual resources due to their high visibility and the extended periods of time needed for natural vegetation cover to become re-established.

Short-term effects would occur to visual quality from smoke associated with prescribed fire and wildfire and the subsequent modification of vegetation, and from dust from development and logging activities. Reduced visual quality from development and natural causes would have an individual short-term effects. The level of affected visual quality cannot be determined but is not anticipated to be significant for the whole planning area.

Long-term impacts could be anticipated with the booming natural gas developments in Class II visual resource management areas. Developments in or adjacent to the Green River, Wind River Front or the Adobe Town/Haystacks area would have the greatest affect to visual resources. Additionally, the VRM class II values in the Greater Sand Dunes ACEC are in jeopardy because of the 20 producing natural gas wells and the associated facilities within this area. Additional production units may become dominate in the landscape and may not be able to be mitigated which could result in a VRM class reduction.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to visual resources.

Watershed/Soils

Achieving proper functioning condition in streams and riparian areas would benefit watershed and soil resources.

Cultural resource data recovery excavations, because of their limited area extent, minimally affect soils although locally the impacts can be quite destructive. Proposed projects suggest 7 to 10 acres per year would be disturbed.

Fire suppression activities would cause soil erosion in burned areas at rates dependent on the intensity of the fire and suppression efforts. Prescribed burns generally affect soil much less than firefighting efforts. Soil loss may increase immediately after the burns due to the removal of vegetation. However, productivity should increase 2 to 3 years after burning, with accompanying reductions in soil losses.

There would be controlled timber harvest on the Wind River Front with an emphasis on protecting watershed resources without augmenting stream flows above capacity. The only possible problem which might develop is an uncontrolled road system pioneered by firewood cutters.

Although timber harvest is a minor activity, public demand for firewood is not. This activity has an associated high road density which routes storm runoff causing rill and gully formation on and below the road. This provides more sediment transport and erosion than that of a natural condition. Such activities would be avoided when possible.

Rejuvenation of aspen by fire on Pine Mountain and Little Mountain may create more mass wasting, but, with proper layout of the burns or treatments, this may be avoided.

Land actions such as rights-of-ways for pipelines and roads can adversely affect watershed resources. Because of the extent of these rights-of-way and potential runoff, increased sediment and salt could be produced.

Restrictions on Desert Land Entries would prevent unsuitable soils from being cultivated, thereby limiting sediments and salts from entering the Green River/Colorado River system.

Impacts to water and soil resources from grazing are caused by over-utilization of riparian areas where soil compaction and vegetation removal can create bank instability. This leads to loss of channel stability and results in higher sediment and dissolved solid loads including salt and phosphate loads into streams. Implementing AMPs with emphasis on riparian area management would greatly improve riparian areas over the next 20 years.

Salt block placement encourages concentrated animal activities which cause soil compaction and create an area denuded of vegetation and saturated with salt. The results of this are much the same as over-utilization. Long-term adverse effects should be reduced with the implementation of guidelines to keep salt blocks a minimum of 500 feet from wetlands or water bodies.

The development of minerals and related surface disturbance has the largest and most obvious impact to water and soil resources. Potential impacts from operations involving the minerals program include stream sedimentation, soil contamination, salt and phosphate loading, groundwater contamination, streambank and channel instability, changes in aquifers, augmented water flows, and water disposal problems.

The possibility exists for groundwater contamination from improper casing and cementing operations, undetected or unreported spills, or leachate migration from trona settling ponds and produced water pits. In addition, dewatering of coal or coalbed methane can adversely affect both quantity and quality of groundwater since such large areas are dewatered and the produced water is either re-injected or evaporated.

Strip mining of coal has some unique impacts associated with it. The most important impacts are the complete recontouring and denuding of the landscape and the backfilling of industrial wastes associated with mining into the open pits. The result of the recontouring and denuding can create a situation that augments flood flows unless retention ponds are used. These flows, if allowed to go unchecked, can force stream channels in the area to regrade themselves in response to such flows. This commonly results in incision and

widening of the stream bed thus causing more sedimentation, salt, and phosphate loading. However, with the proper sediment catch basins and other runoff control, the presently operating coal mines are not expected to pose much of a problem to the Bitter Creek watershed.

Drilling fluids and accompanying chemicals for production drilling may cause contamination of local areas of soil and groundwater in certain cases. Oil-based drilling muds can contain benzene or other hazardous chemicals. Proper disposal practices and recycling or drilling fluids, following current BLM guidelines, can usually place drilling fluid constituents at depths sufficient to prevent adverse effects to the surface soil horizons.

While there would be surface disturbance restrictions on steep slopes or in areas of known landslide potential, some development may occur in such areas resulting in slumping and accelerated soil loss which would be locally important but not significant. In areas of high landslide potential such as the south face of Little Mountain, the likelihood of construction triggering slippage would increase, especially on toe slopes.

Off-road vehicle use can often impact water and soil resources if done in an uncontrolled manner. The largest impact from off-road vehicle use is sediment production and erosion from uncontrolled stream crossings, use of wetland meadows, and riparian area compaction from numerous poorly placed 4-wheel drive roads.

Designation of areas suitable for off-road vehicle rallies and cross-country races would have local adverse impacts on soil conditions through compaction and disturbance of the surface layers. Proper monitoring and rehabilitation should restrict the extent of soil damage.

Outdoor recreation centered around water bodies can affect bank stability along lakes and streams. Lack of channel stability can affect the stability of the riparian zone on which most camping and other activities occur. Compaction and/or loss of the riparian area greatly reduces stream stability which in turn increases sediment, salt, and phosphate loads. Use of a 200-foot buffer strip between perennial water and camping may eliminate some of the impacts.

Another impact to water resources is the sewage pollution associated with recreating close to, or in, the water. If such activity becomes too large, often the sewage generated from such heavy use would result in eutrophication of downstream water bodies and would increase the likelihood of water-borne diseases.

Overuse of riparian areas by recreation interests can lead to reduced shading of the water along streams as the woody riparian vegetation is stripped from the banks. This loss of shade can promote increased stream temperatures, in turn reducing dissolved oxygen to levels below those required to support fish.

Vegetation removal by fire or other means can have adverse impacts on stream hydraulics. Vegetation removal can cause an augmented flow regime which forces the stream channel to readjust its width and depth to accommodate the larger flows.

Vegetation manipulation to enhance wildlife habitat would cause localized short-term impacts to physical and chemical characteristics of soils, increasing erosion susceptibility through the loss of both ground cover and litter accumulation. Over the long term, vegetation should increase over pretreatment production levels which would decrease the erosion hazard. Proposed burns on Little Mountain could influence the dynamics of unstable soils, causing mass movement on unstable landscapes.

When designed and installed properly, instream structures can provide temporary stability to a channel, fishery habitat, improved riparian conditions by raising water tables, etc. They are especially useful in emergency situations where things such as grade stabilization or where pool type habitat is needed quickly. Instream structures can change channel dynamics, as well as the physical position of the stream channel, if not properly placed. The use of instream structures in the past has been a haphazard process where little attention was given to the location or size of the structure. This has created a situation where at the very least the structure failed, or at worst where the channel moved and created more instability problems than before. Therefore, the design and placement of all instream structures would be reviewed prior to their installation which should minimize any adverse effects.

Summary

Within the Planning Area Only: Long-term benefits would occur to watershed resources from mitigation measures and particularly no surface occupancy areas preventing disruption of soil and watershed values. Additional prescriptions to protect watershed values and to manage special areas would reduce watershed impacts and provide an added benefit.

The Proposed Plan would provide for rehabilitation of present and future disturbances. Constraints on burning of vegetation on steep slopes would help control sediment, although some short-term impacts from sedimentation would occur. Constraints on surface disturbing activities on steep slopes will help maintain soil stability thereby reducing sediment load. Revoking withdrawals and allowing increased locatable mineral development would certainly cause drastic effects on a local scale. However, with proper mitigation, and management practices, this disruption and increased sedimentation should be insignificant. Not leasing areas for mineral development, constraining road location and rights-of-way, and requiring designed road plans should reduce soil erosion and accelerated silt and salt loading.. Application of guidelines from EPA's Stormwater Discharge policy will assist in maintaining landscape stability.

Aggressive implementation of the Red Creek Watershed Management Plan and revision of grazing practices would aid in the recovery of this area, thereby reducing the sediment/salinity load into the Green River/Colorado River system.

Considering the Expanded Impact Analysis Area: The greater the degree of soil and vegetation disturbance the greater the potential for adverse impacts to water quality. This principle applies to immediate and cumulative impacts.

Cumulatively, the watersheds that drain into the Green River would be the most affected, as most of the activities occur within these areas. Fontenelle and Flaming Gorge Reservoirs would trap most sediment transported by the Green River. Appropriate mitigation and project design during site specific analysis would minimize off-site sedimentation.

Any additional cumulative impacts for individual watersheds would be determined on a project basis. These analyses would include but not be limited to an estimate of current disturbances and an estimation of predicted disturbances from the project. If these studies indicate that a threshold level is being approached within a watershed, as determined by professional judgement or BLM-approved methods, additional mitigation or a restriction of activities may be required.

Wild Horses

Management actions described in the Proposed Plan would generally benefit wild horse management. A total of 17,400 AUMs would be provided to support an appropriate management level

(AML) of 1,450 horses. A new wild horse management area would be established in the Little Colorado Desert. The AML in the new area would be 100 horses and populations would range from 69 to 100.

Fence construction in the wild horse herd management areas would be restricted to enhance multiple-use management and not interfere with the movement of the horses. Fifteen water developments would be constructed in crucial winter ranges when in conformance with wildlife objectives. Water development construction would cause a minor impact, and it is expected that 2 AUMs would not be available to wild horses. Long-term improvement in forage conditions could be expected due to improved wild horse distribution patterns created by the new available water.

The development of a selective gathering and fertility program would benefit wild horse management. This action would allow herds to be managed for specific conditions, special colors, and markings and should aid in gathering on 2-year cycles.

The development, evaluation, and revision of wild horse herd management plans would benefit wild horses. These activity plans contain objectives for the management of the horses and multiple-use management of other resources.

There would be no expected impacts to wild horses from management actions described for Air Quality, Watershed, Recreation, and Forests and Woodlands.

Avoidance of significant cultural sites, limitations on activities within ¼ mile of historic trails, and subordination of activities to historic landscape values in some areas may constrain the BLM's ability to construct rangeland improvements aimed at achieving better distribution and management of livestock and wild horses. Additional survey and design costs could be necessary to avoid effects to cultural resources.

No known impact would be expected to wild horse management due to fire suppression activities. Prescribed burns and wild fires would cause a short-term loss of forage for wild horses but a net long-term gain of forage condition and availability after approximately 2 years.

Sediment ponds used by the mineral industry and hazardous waste spills could be hazards to wild horses.

Management actions proposed for the next 20 years would remove forage from an additional 55,523 acres. In total, forage production would be affected on 95,941 acres. During the next 20 years, an estimated 41,192 acres would be reclaimed. After reclamation, roughly 54,749 acres would still be out of forage production.

Allotment categorization would not impact wild horse management. The range improvements proposed would not impact wild horses. It is anticipated that the livestock actual use levels would remain in the range of 180,000 to 200,000 AUMs per year. If this level of grazing continues, competition for forage between wild horses and livestock would remain minimal.

Some harassment of wild horses from off-road vehicle users would continue.

The no surface occupancy management on special status plant species sites and the inventory requirement for potential habitat should not have an impact to wild horse management but could limit the locations available for rangeland improvement construction or increase project survey and design costs. Wild horse grazing distribution patterns may not improve if rangeland improvement project construction is limited.

The design and construction costs for wild horse improvements could increase to conform with VRM Classes II and III standards. The restrictions applied to the ½ mile area around the proposed wild horse viewing areas may cause a problem since the only way to hold horses in an area may be with a range improvement such as a water development.

The impacts to wild horses due to management actions described for the Steamboat Special Management Area would be minimal. The Divide Basin wild horse area borders this special management area and horses occasionally stray into the area.

The segments of the Sweetwater River nominated for wild and scenic designation lies outside of any wild horse management areas. Therefore, there would be no known impacts to wild horses or their management.

Limiting off-road vehicle use to designated roads and trails would benefit wild horse management. These benefits would accrue as a result of decreased disturbance to the horses and by vegetation recovery on existing trails not designated as open.

There would be no impacts to wild horse management due to management actions described for the White Mountain Petroglyphs, Pine Springs, Cedar Canyon, and Red Creek ACECs. These areas do not lie within any wild horse management areas.

The Natural Corrals and a portion of Greater Sand Dunes ACECs and the Red Desert Watershed Area lie within the Divide Basin herd area. No known impacts or conflicts are anticipated with management actions described for these areas. Some impact could be expected due to no surface occupancy stipulations described for the Oregon Buttes ACEC, but at this time no wild horse improvements are planned in that area.

There would be no known impacts to wild horse management due to management actions described for the Currant Creek special management area, although it does lie within the Salt Wells Wild Horse Herd Area.

The Monument Valley management area lies within the Adobe Town herd area. With the present livestock use and wildlife numbers, there would be no known impacts or conflicts with wild horse management

There could be an impact to horse management due to no surface occupancy stipulations on 5,260 acres in the South Pass Historic Landscape. This action could prevent construction of water developments needed to enhance wild horse distribution.

Wild horses would be placed under stress as a result of being captured. Some horses may be killed or injured. However, according to past experience, this number would be less than one percent of the horses gathered.

Summary

Within the Planning Area Only: Short-term and long-term losses of forage would occur due to development activities, material sales, and rangeland improvements, affecting approximately 4,565 AUMs. Prescribed burning on 67,700 acres and wildfire would have a short-term impact on forage but should result in a long-term increase in productivity of forage.

No surface occupancy requirements affect project placement and development aimed at improving wild horse distribution. This could have a long-term effect, and distribution problems would continue for both the short term and long term.

Approximately 30 AUMs would be lost over the long term due to construction of range improvements in wild horse herd areas. Development of 15 water facilities would provide a long-term benefit to horses by improving distribution patterns. A short-term vegetation

loss would occur during construction. A long-term increase to full livestock grazing preference could create competition for forage.

The Little Colorado Desert wild horse Herd Management Area would be designated, and managed for 100 horses. Impacts could occur to wild horses as a result of surface disturbing activities related to oil and gas development, and livestock grazing and loss of vegetation. These impacts are mitigated to some degree by an increase in opportunity for public enjoyment of free-roaming wild horses on an additional 619,541 acres of public land. Water developments to better distribute wild horse use would be constructed, this would serve to lessen any impacts related to poor wild horse distribution in the five habitat management areas. Planned actions to improve the vegetative resource would be beneficial to wild horses.

Considering the Expanded Impact Analysis Area: Wild horses would not be adversely affected by expanded development largely due to their ability to move into other areas, and the large amount of area they have to move into. Long-term displacement would not necessarily affect wild horses as they seem to adapt to activities.

Wildlife

Managing Steamboat Mountain and Boars Tusk-Killpecker dunes to protect natural and geologic features may give added protection to some wildlife populations.

Commercial timber harvest in the Wind River Mountains could adversely affect wildlife species through altering or fragmenting habitat. These impacts should be minimal with the management prescriptions to be applied. Management for the Pine and Little Mountain areas would benefit wildlife habitat. A 25-acre clearcut management prescription could reduce calving and fawning areas and reduce the quantity and quality of arboreal wildlife habitat by about 13 acres annually.

Linear rights-of-way would be excluded in the Currant Creek watershed and excluded in the Red Creek ACEC. This would reduce erosion and loss of crucial Colorado River cutthroat trout habitat and decrease silt loading to the Green River and Flaming Gorge.

Some localized overuse of forage and trampling damage presently occurs in uplands and riparian habitats under the current livestock grazing level of 180,000 AUMs. In many of the allotments where grazing levels are substantially below preference, habitats are generally improving.

Under the Proposed Plan, livestock use would continue to be licensed both in kind and in season of use. During the development of AMPs, available livestock forage would be based on suitability criteria (slope, badlands, distance from water, etc.) which would generally benefit wildlife. Maintaining an active grazing preference of 318,641 AUMs could result in a downward trend in vegetation quantity, quality, and species composition and diversity even with implementation of AMPs and range improvements. This would affect habitat quality.

Riparian management actions would provide benefits to wildlife habitat by restoring pre-existing plant communities. Since 70 percent of Wyoming wildlife species are found on riparian habitats which represent 3 percent of the land area, species richness would be improved.

Fences, even when properly designed, result in some wildlife mortality (big game animals, low flying birds, predators, and prey species). Fences constructed across big game migration corridors increase stress, and may lead to increased loss in big game reproduction and even direct mortality, especially during severe winters. Herding of livestock is preferred to fencing where adverse impacts to wildlife are contemplated. Fences on public lands would continue to cause direct and indirect wildlife mortality. Fences create a hazard to sage grouse, raptors, waterfowl, and other non-game species to a certain degree.

Construction of livestock water developments within crucial big game winter ranges could have adverse impacts to big game populations and habitat. This could increase forage consumption by livestock and wildlife and would reduce available forage for wintering big game. Constructing water developments outside of crucial big game habitat could lessen competition for forage between livestock and big game.

Authorizing livestock water developments in crucial winter ranges, ridgetop habitats, and low precipitation areas (less than 9 inches/year) may potentially reduce wildlife species richness by 10 to 15 percent. Wildlife would not benefit from these water developments as they probably would not be operated during critical periods, when livestock are not in the area.

Inaccurate conversion ratios (sheep to cattle) and lack of application of suitability criteria has caused concentrated livestock use in riparian habitats (i.e., Sugarloaf and Red Creek allotments) where upland topography is poorly suited for cattle. Conversions from sheep to cattle have also resulted in more habitat competition for wildlife especially in relation to streams, wetlands, and big game parturition ranges.

Closing Palmer Draw and special exclosures to livestock grazing would decrease utilization, improve riparian vegetative communities, and benefit wildlife and fisheries habitat. Unallocated forage may go to livestock and not benefit wildlife habitat.

Anticipated oil and gas activities may impact approximately 246 raptor nests, 1,020 acres of sage grouse nesting habitat and cover, and 7,230 acres of big game crucial winter range. The majority of impacts would be associated with maintenance and operation activities. Areas of anticipated activity include the Greater Nitchie Gulch, Little Colorado Desert, and Wamsutter Arch oil and gas fields (Table 4-4). Greater Nitchie Gulch contains approximately 92 percent crucial big game habitat (primarily elk and deer), Little Colorado Desert contains approximately 38 percent crucial big game habitat (deer, antelope, and moose), Wamsutter Arch contains approximately 19 percent (antelope), and the remainder of the planning area contains about 36 percent crucial habitat.

Oil and gas development and maintenance activities in the Nitchie Gulch area have caused forage loss for big game and displacement from established habitats. Recently, elk were displaced from habitat in this area. In 50 years, about two-thirds of the area could again be available for elk use.

Big game habitat loss results from road construction and road use, facility construction and placement, pipeline construction, field facility maintenance, and disturbance zones around these areas. Cumulative effects of yearlong livestock activity compound habitat impacts through displacement, forage competition, water competition, and social interaction. Disturbed acreages would not be fully reclaimed and portions would remain unavailable as habitat for wildlife for 20 years or more. Limited rainfall, poor soils, and severe winter conditions make reclamation difficult, increasing the time required to re-establish suitable vegetation to pre-disturbance composition and density.

Seasonal mitigation would not provide adequate long-term protection for wildlife. Development of long-term land use activities would continue to displace wildlife and disrupt nesting/fawning areas during the operation phase of the activity.

Acreages taken out of production from surface disturbing activities do not amount to a significant adverse impact given the large

amount of crucial winter range complexes in the resource area. However, displacement of animals from operational activities is much more extensive, especially where elk are affected.

Displaced wildlife move to less desirable habitat where animals may be more adversely stressed than that area from which they came. Displacement may also lead to a long-term change in migration patterns and overuse of crucial habitat.

The planning area has a proposal for coalbed methane development in addition to other proposals. Long-term big game habitat loss from exploration, development, and production may amount to 2,572 acres. Elk and antelope displacement (short term, temporary loss) due to roads and other human activity amounts to about 67,700 and 24,300 acres, respectively. Coalbed methane development under this proposal could displace 300 to 400 elk from the Steamboat/Sands elk herd and may cause them to leave the plains habitat and move to the Wind River Mountains and other areas of suitable habitat. This may make maintenance of this herd objective very unlikely. Antelope in the Killpecker drainage may be adversely impacted by displacement, animal stress, and forage loss for 50 years or more.

Mining and associated activities could remove about 22,000 additional acres of big game habitat over the short term. Even after some reclamation, an estimated 22,800 acres would be lost for big game use over the long term. This would amount to approximately 25 percent of the habitat within the coal potential area. Surface mining of coal could adversely affect about 186 raptor nests and about 15,050 acres of suitable raptor habitat. Under the Proposed Plan, eight sage grouse leks or portions of their habitat could be adversely affected.

The known sodium leasing area in the planning area is open for development with protective stipulations. About 3 percent of the crucial antelope winter range within the known sodium leasing area would be disturbed.

Riparian areas, wetlands, and other high value wildlife habitats may be adversely affected if mining for locatable minerals under the 1872 Mining Law occurred. Habitats where mineral exploration and development could occur include approximately 150 miles of streams, 99,800 acres of crucial big game habitat, and approximately 71,700 acres of raptor habitat. Potential adverse activities associated with this kind of development include loss of wetland and riparian habitats, contamination of streams, and big game habitat disturbance of calving, fawning, and crucial winter ranges. Potential development of gold (53 acres) and jade (6 acres) was analyzed. Potential adverse activities associated with this kind of development include access and haul road development, waste water and tailings disposal, vegetation removal, soil contamination, noise, dust, and human activity. These activities would remove and/or fragment habitat, displace wildlife, and change traditional use areas.

Zeolite exploration and extraction is expected to occur over 205 acres which have value for both raptors and antelope. This mineral is found within a trophy antelope management area and may affect the ability to maintain habitat for a trophy population. Transportation and extraction of this mineral could adversely affect at least 4 raptor nests, 2 prairie dog colonies, and 2 perennial streams.

Reclamation could result in altered vegetation communities or introduction of undesirable plant species. Trails created by geophysical operations could become roads after use by other off-road vehicles, thereby reducing available habitat for wildlife. Seismograph activities may disrupt sage grouse reproduction (breeding and nesting). Short-term impacts may displace wildlife from 390 miles of new seismic line annually.

Under off-road vehicle management prescriptions, adverse impacts to wildlife should be minimal. Beneficial impacts from a higher level of off-road vehicle management and enforcement could reduce stream siltation (resulting in improved fish habitat) improve plant density, and reduce stress to wildlife.

Recreation management actions should mitigate adverse impacts to wildlife. Some displacement during high density recreation use would still occur. Wildlife would be temporarily displaced during hunting seasons and off-road vehicle rallies and some long-term habitat loss would occur when campgrounds are developed. Adverse impacts to nesting raptors adjacent to or within recreation areas is anticipated; however, these impacts do not appear to be significant at this time. Raptors that nest in or around recreation areas appear to habituate to this activity.

Treatment of rangelands could adversely affect the amount and quality of available forage and cover for wildlife for the short term.

Vegetation treatment in riparian areas and river islands can enhance wildlife habitats and improve forage and plant diversity. Spawning areas could be adversely impacted in the short term due to silt deposition following treatment. Use of buffer strips in treatment areas would minimize this impact.

Wildfire could result in a long-term loss of habitat and could be considered an unavoidable adverse impact to the habitat.

Management actions taken under Visual Resource Management would benefit wildlife and wildlife habitat. Refer to Appendix 14-1 and Appendix 14-2 for specifics on impacts to individual threatened, endangered, and special status plant species.

Summary

Within the Planning Area Only: Management actions would result in fewer adverse impacts to wildlife habitats than Alternatives A and B but more than Alternative C.

Increased developments and community expansions would continue to remove and fragment wildlife habitats. Demands on public lands from recreationists would continue to increase, resulting in less pristine habitats and more access into these crucial habitats which will cause additional displacement. Maintaining habitat to support existing Wyoming Game and Fish Department population objectives for big game would become more difficult.

Adverse impacts to crucial wildlife habitats (e.g., riparian areas, crucial winter ranges, parturition areas, game bird winter concentration areas, etc.) from livestock grazing would increase if all current nonuse AUMs are used. These adverse impacts would be especially severe in crucial winter ranges where other commodity uses such as mining or oil and gas development is taking place. Displacement of livestock into these crucial habitats or concentrating livestock in crucial habitats where vegetation has been decreased due to commodity development would result in less forage available for big game animals during winter periods. This would be especially critical in severe winters. These impacts could be reduced through implementation of new AMPs and/or revision of management in old AMPs to include riparian objectives. Vegetation taken out of production due to development would result in a reduction of available livestock AUMs which would benefit wildlife habitat.

Seasonal constraints would be used to mitigate impacts to wildlife from human activities during crucial periods and provide short-term protection for wildlife. Long-term maintenance and operations activities in crucial wildlife habitats would continue to cause displacement of wildlife from crucial habitats, including disruption of nesting, fawning and calving areas, and crucial big game winter habitats. Increased access for recreationists due to development of

new roads would magnify the negative impacts to wildlife and their habitats for the life of the project. Maintenance and operations activities in the East LaBarge and Nitchie Gulch oil and gas fields has resulted in the loss of these areas to wintering elk for the life of these fields (more than 50 years).

Loss of crucial antelope winter range around Rock Springs due to community expansion places more demands on adjacent wintering areas. Potential exists for significant impacts to the migrational capabilities of the Sublette Antelope herd if full field development occurs in the Stagecoach, Jonah, and CNG gas fields. This would not occur from habitat loss, but from fragmentation of habitat areas and displacement from existing migration corridors due to roads and increased activity. This would be especially significant when winter conditions are similar to the winters of 1978 and 1983.

Surface disturbing activities would continue to cause long-term losses of wildlife habitat. Overall, less acreage would be disturbed than under Alternatives A and B.

Management prescriptions for wildlife resources, watershed, visual resources, and off-road vehicle use would provide long-term benefits to wildlife populations and habitats. Displacement and loss of habitat from development and disruptive activities would create an unavoidable adverse impact (see Table 4-4). Fire (natural or prescribed) would result in a short-term loss of habitat but would benefit habitat in the long run.

Wildfire would generally result in a short-term loss of habitat but would generally benefit wildlife habitat over the long term. Wildfire could result in a long-term loss of habitat and could be considered an unavoidable adverse impact to the habitat if livestock graze the burned area immediately after the fire.

Land disposals would result in an irretrievable loss of certain types of wildlife habitat. However, this is offset somewhat through proposed acquisitions to enhance wildlife habitat. Generally, big game winter habitat is involved in the disposal and fisheries and riparian habitat is proposed to be acquired. Surface mining can result in an irreversible irretrievable loss of wetlands and springs, and although mitigation occurs, the original site is lost. Highway and major road development also results in irretrievable losses of habitat as they are generally permanent structures. Interstate 80 would continue to be a major barrier to the migrational capabilities of the Sublette antelope herd. The impacts from road development would be reduced from Alternatives A and B.

Considering the Expanded Impact Analysis Area: Habitat fragmentation, particularly for wildlife, would occur in some areas, especially in areas with many access roads and surface disturbances. Transportation routes tend to dissect habitats and can act as barriers to some species, especially in severe winter conditions. This can also increase the accessibility to the general public into areas that have previously been somewhat inaccessible to vehicles. This would become more important and increase adverse effects to wildlife as increased demands for use of public lands occur. Migration routes could be altered, changing some traditional use patterns on a local level. For example, it may become harder for antelope to populate the Grand Teton and Jackson Hole areas if they are unable to migrate to their traditional wintering grounds around Rock Springs. Seclusion areas for wildlife would become smaller and more dispersed. This could diminish our ability to maintain current population objectives for big game species. Again, transportation planning would help to reduce this overall effect.

Loss of crucial antelope winter range around Rock Springs due to community expansion places more demands on adjacent wintering areas.

A summary of impacts to the individual herd units that may be affected by actions in the Expanded Impact Analysis Area follows.

Antelope

Sublette Herd

In the future, it may become increasingly difficult to maintain current objective levels for this herd. One limiting factor in maintenance of the objective levels for this herd is adequate crucial winter range. This herd historically winters in the Rock Springs area during severe winters. The last time this occurred to any degree was during the winter of 1984-85. At that time antelope mortality in Rock Springs was quite high. One of the primary reasons for this is that I-80 creates a major barrier to this herd and affects the herd's ability to reach other crucial winter range south of Rock Springs. Also, the community of Rock Springs has continued to expand north absorbing more of this herd's crucial winter range. This expansion is expected to continue as there are currently plans to sell more private lands north of Rock Springs which would result in further community expansion. Another factor is that much of the crucial winter range is located in the checkerboard land pattern and BLM only has control over developments on BLM-administered lands, thus the limitations on the availability of crucial winter range may be increased further.

Accessibility and useability of crucial winter range is not the only contributing concern for this antelope herd. Accessibility and use of summer and transition ranges would also become more of a problem in the future. More summer homes are continually being built around the Pinedale and Bondurant area and with them more fences and roads. Also, extensive mineral development is very likely to occur within the migration route for this herd, fragmenting portions of the habitat, which may also limit the ability of this herd to reach crucial winter ranges. Fragmentation of these habitats and continued construction of additional barriers cause more stress to the herd, which could have a direct effect on the physical condition of the animals upon arriving on crucial winter range, and their ability to survive severe winter conditions.

Given these circumstances, the capability of the habitat to meet objectives for this herd would be significantly affected (Table 4-5).

West Green River Herd

As indicated in the analysis for the Expanded Moxa Arch Area Natural Gas Project Draft EIS, the capability of the habitat to meet objectives for this herd may be significantly affected. This would occur due to the loss of crucial winter range habitat in the checkerboard, to the point where sufficient habitat would, for the life of the well field, be unavailable to support current objective numbers. Much of the crucial winter range is located in the checkerboard land pattern and BLM only has control over developments on BLM-administered lands, thus the limitations on the availability of crucial winter range may be increased further. Following field abandonment, and an appropriate time for reclamation to desired habitat conditions, population objectives could be recovered (Table 4-5).

Elk

Upper Green River, Pinedale, and Piney Herds

Competition from extensive recreation use, livestock grazing and oil and gas development on crucial winter ranges would make maintenance of these herd objectives very unlikely. Continued construction of summer homes in the Upper Green River area also jeopardizes the ability of the habitat to meet population objectives for

these herds. Maintaining the population objectives for these areas would depend primarily on the continued operation of the elk feedgrounds in these herd areas. Should the existing feedgrounds be discontinued then it is likely that sufficient habitat would not be available to maintain herd objectives (Table 4-5).

Steamboat Herd

The Steamboat elk herd is very susceptible to displacement by human activities because of the lack of hiding and escape cover. Continued development proposals and other permanent uses in the Steamboat, Essex, and Jack Morrow Hills areas make maintenance of this herd population objective very unlikely. Road construction and increased access into remote areas would also increase use by the general public adding to the impacts of this desert elk herd. If effective mitigation occurs (such as remote or off-site facility placement, and seasonally restricting human activity to reduce access and traffic) in crucial habitat and calving areas, the herd objective levels may be sustained (Table 4-5).

Mule Deer

Studies have shown that there is direct competition for forage between deer and cattle for saltbush and winterfat on crucial winter range. Although use by cattle generally occurs in the spring or summer months, low plant vigor has generally resulted in little regrowth which makes these preferred vegetation types unavailable during winter months. Studies have also shown that sagebrush makes up a large component of the deer's winter diet; however, this does not mean deer prefer it over other shrub species such as serviceberry, mountain mahogany, and bitterbrush. Control of wildfire is largely responsible for the loss of key shrub species and the even-aged condition of sagebrush communities.

Increasing amounts of vegetation removal in crucial winter range by development activity compounds the problem of poor crucial winter range condition. Although many acres are returned to production by reclamation practices, almost all of this acreage contains forage either unusable by deer or of a different diversity that may not provide the same nutritional benefits as the original forage. Shrubs planted during reclamation may take many years to return these habitats to a condition that provides usable forage for the deer. Loss of vegetation due to development activities has resulted in a reduction in available habitat and can result in increasing competition between livestock and wildlife for remaining vegetation. Oil and gas development also results in decreased opportunities to use fire as a treatment tool to rejuvenate decadent plant communities, due to safety concerns.

Wyoming Range Herd

Additional roads built throughout herd units have resulted in increased human-wildlife conflicts. Areas have been closed to vehicle use within portions of this big game crucial winter range due to this increase in ORV use. Antler hunting and poaching during critical winter periods has resulted in increased stress to deer which causes increased mortality. Many areas once roadless, are today crisscrossed with roads and pipelines.

Given the poor condition of the Wyoming Range winter habitat, extensive oil and gas development, continued problems with unauthorized ORV use, and increasing competition from livestock grazing, the likelihood of reaching and maintaining the population objective for this herd is unlikely. Although studies have not concluded a direct conflict between deer and increased human activities, a combination of all the factors mentioned above significantly affects the capability of the habitat to meet desired population objectives for this herd (Table 4-5).

Steamboat Herd

Although deer are probably more tolerant of human activities than elk, any large increase in mineral development activities in this herd unit makes it unlikely the objective for this herd unit could be met. The habitat at this time is not capable of achieving the population objective for this herd, with the development that is occurring in a portion of this herd area. Also, because this herd area is predominantly a desert type environment, areas for good fawn rearing are rather few and far between. Direct competition between elk and deer for these parturition and winter use areas is probably more prevalent here than in most herd units. Therefore the capability of the habitat to meet the objectives for this herd would be significantly affected (Table 4-5).

Special Management Areas

Cedar Canyon ACEC

Management activities in Cedar Canyon could have some long-term adverse effects on resource values, but effects would be reduced due to management prescriptions and restrictions.

Rock art in the Cedar Canyon ACEC would benefit from management prescriptions. An area (vista) around the main rock art panels would be protected from most intrusions and would respect spiritual concerns expressed by Native Americans. Other areas within the ACEC, including small isolated rock art sites, may not have this same level of protection. These archeological sites would generally be dealt with under standard Section 106 compliance prescriptions which could result in some adverse effects to them. The 20-acre main rock art site would be an exclusion area for rights-of-way which would offer increased protection for this site. Opportunity would be provided for Native American rituals.

Displacement of big game from crucial winter range habitat would continue over the long term due to continued traffic and road use, construction, and production activities. Habitat availability could decline with further development activities. A reclamation plan would be prepared to reclaim disturbed areas, restoring some habitats. Impacts to erosive soils would be reduced by restricting off-road vehicle use including over-the-snow vehicle use.

Oil and gas development and maintenance activities in the area have caused forage loss for big game and displacement from established habitats. Recently, elk were displaced from habitat in this area. In 50 years, about two-thirds of the area could again be available for elk use.

Big game habitat loss results from road construction and road use, facility construction and placement, pipeline construction, field facility maintenance, and disturbance zones around these areas. Cumulative effects of yearlong livestock activity compound habitat impacts through displacement, forage competition, water competition, and social interaction. These effects should lessen in the long term once site specific plans are in place.

Coal management prescriptions such as no surface mining and limited surface facilities would benefit the resources in the ACEC by minimizing disturbance levels.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the Cedar Canyon ACEC.

Greater Red Creek Proposed Area

Management prescriptions for this area (131,890 acres of the Red Creek ACEC, Currant Creek, Sage Creek), would offer protection

for watershed and fisheries resource values. Watershed and fisheries resources would receive the greatest benefit.

Measures to control erosion would be generally beneficial to cultural resources by curtailing natural deterioration of numerous buried archeological sites within these drainages.

Withdrawing 79,620 acres in Currant Creek and Red Creek would prevent addition to sediment loads by locatable mining exploration. The mineral withdrawals to be revoked would remove some protection throughout the area; however, the new withdrawals would offset this impact.

Coal mining activities would be restricted and surface facilities limited. This prescription would benefit resource values in the area and no adverse impacts would be anticipated.

Closing Red Creek and Currant Creek to surface disturbing activities, along with no mineral leasing in Red Creek, would ensure long-term reductions in sediment loading and enhancement of fisheries habitat. Road closures and closing the right-of-way concentration route through Red Creek to further development would result in long-term benefits to the area and an overall reduction in produced sediment. The designation of Currant Creek and Red Creek as an exclusion areas to rights-of-way would also reduce sediment loads. This, coupled with the avoidance of rights-of-way throughout the remaining area, would require major reroutes of facilities around this area. Closure to mineral leasing, mineral location, sodium exploration, and mineral sales would mean a loss of revenue from mineral resource development.

Short-term impacts would occur from vegetation manipulation but should be outweighed by long-term benefits. Implementation of riparian management objectives would provide improved riparian areas in the long term. Currant Creek would benefit from the no surface occupancy for surface disturbing activities and wildfire suppression restrictions. Sage Creek would benefit over the long term from the preparation and implementation of site specific plans to mitigate impacts prior to disrupting and disturbing activities. Off-road vehicle activity would be limited to designated roads and trails, which could, over the long term, reduce adverse effects to water quality, watershed values, and fisheries habitat.

Wildfire and suppression activities could remove vegetation which would contribute to accelerated erosion. Additional management prescriptions would reduce overall short- and long-term impacts to ACEC values.

Currant Creek/Sage Creek Portion

Short-term impacts would occur from vegetation manipulation which can cause a decrease in vegetative cover, but should be outweighed by long-term benefits of vegetation manipulation because in the long-term, vegetative cover would increase, aspen and shrub communities would be rejuvenated, and erosion would decrease. The no surface occupancy management within the 23,740-acre Currant Creek area would ensure long-term reductions in sediment loading, and enhancement of fisheries habitat. The designation of the entire area as an exclusion and/or avoidance area to rights-of-way would also reduce sediment loads, but would require major reroutes of facilities around this area.

Red Creek Portion

The proposed actions for the Red Creek area provide for a number of activities which are expected to decrease erosion. These include physical erosion control structures, improvements in livestock and wildlife grazing management, and reclamation or improvement of roads and trails. Since the management objective is to reduce accelerated erosion, and therefore sediment and salinity into the Green River, it is expected that sediment would decrease in proportion to the number of proposed projects actually completed.

Soil aggregate destruction and compaction should be reduced, thereby increasing soil infiltration rates and decreasing surface runoff. Closure and reclamation of up to 35 miles of roads and trails would reduce soil loss.

A no leasing requirement on Red Creek would keep any new disturbance such as well pads, gravel pits, and associated roads from augmenting the present disturbance.

Only those roads necessary for management of the area would be kept open and the remainder obliterated and put to bed. This action would eliminate large amounts of sediment from getting into the Red Creek channel.

For the most part, any timber removal would be insignificant, since only a small acreage of the timber resource exists in the Red Creek watershed and what does exist is only found on the watershed boundary.

Management actions would allow for the re-establishment of mature willow stands in the Red Creek floodplain thereby reducing the bed load and suspended sediment emanating from the watershed. Soil erosion rates should decrease in the long term with improved grazing management, road closures, and restrictions on development. Areas along drainages should develop more vegetative cover with 3 years rest. This would be especially significant to the regrowth of willows and cottonwoods in the riparian areas.

Closing the right-of-way concentration route through Red Creek to further development would result in long-term benefits to the area and an overall reduction in produced sediment.

The watershed condition in Red Creek would improve due to closure of portions of the area to mineral leasing and sales and precluding development activity. Completing a road plan to rehabilitate some roads and upgrade others would have a long-term benefit. Accelerated human-caused erosion and sedimentation would noticeably be reduced, which would have a beneficial effect on water quality.

Natural geologic erosion would continue for both the short and long term.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the Greater Red Creek area.

Greater Sand Dunes ACEC

In the western portion, no impacts are anticipated with implementation of the prescribed management actions and restrictions and with implementation of the Interim Management Guidelines for Lands Under Wilderness Review.

In the eastern portion, management prescriptions and restrictions would be designed to preserve and protect the geological, cultural, visual values, and wildlife habitats associated with the Greater Sand Dunes ACEC. Implementation of the prescribed measures would reduce or minimize effects associated with mineral development, rights-of-way construction, and off-road vehicle use. Residual impacts would be minor and would include:

Seasonal displacement of wildlife, predominantly elk and deer as well as wild horses, would occur through off-road vehicle activity. Seasonal displacement would be most prevalent during the summer and fall months.

Loss of vegetation on stable dunes would potentially occur through the development of oil and gas reserves and through

facilities associated with oil and gas development. Potential oil and gas development could disturb up to 98 additional acres. Oil and gas development in the area surrounding the undeveloped portion (10,500 acres) could disturb an additional 57 acres. Reductions in the visual integrity of the area would result from development of up to 40 new oil and gas wells. Surface facilities (e.g., pipelines, snow fencing, etc.) would create safety hazards to off-road vehicle users. Additional development in the Sand Dunes ACEC would have a direct effect on the area's ability to support deer and elk objective numbers. This would place more importance on other undeveloped areas such as Steamboat Rim. Displacement of deer and elk into smaller habitat locations would increase competition and could lead to deterioration of these areas. These potential impacts would be analyzed in the comprehensive site-specific leasing plan that would be developed for Steamboat Mountain and the Greater Sand Dunes before development would occur.

Trampling and use of dune ponds and adjacent riparian habitat would be affected by livestock, wild horse, and wildlife use.

Benefits that would be realized through the management prescriptions and restrictions include the protection of sensitive cultural resource sites, Crookston Ranch, and protection of the Native American religious and important geological values associated with the Boars Tusk.

Additional benefits would occur from the proposed acquisition of approximately 1,920 acres to consolidate public lands in the dune area which would enhance wilderness, visual, and wildlife values; the removal of abandoned facilities and the marking of known hazard areas would reduce some of the potential impacts to off-road vehicle users; the maintaining of forage and native plant compositions for wildlife and the retention of 10,500 acres as an "open" off-road vehicle area for recreational uses.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the Greater Sand Dunes ACEC.

Natural Corrals ACEC

Management prescriptions, including the existing withdrawal, road closure, and other protective measures in management of the Natural Corrals ACEC, would have beneficial effects on cultural, wildlife, and visual resources by limiting the amount of surface disturbance in the area.

Unauthorized uses such as off-road vehicle use would adversely affect cultural, geological, and wildlife values by destroying surface resources and displacing wildlife. Livestock grazing would adversely affect riparian zones in the short term until riparian management actions are implemented.

Locatable mineral development activities outside the withdrawal area would adversely affect resource values for the long term and would cause an irretrievable loss of geologic and recreational resource values.

Management for Class III visual values and closing the area to coal development would protect and benefit resource values in the ACEC by limiting the amount of surface disturbance in the area.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the Natural Corrals ACEC.

Oregon Buttes ACEC

The natural values of the Oregon Buttes historic landmark would benefit from resource management actions that constrain surface disturbing activities and ORV use in the area. Dispersed nonmotorized recreation use would benefit area values; however, some recreationists would be impacted because of the inability to utilize motorized vehicles for access in the area.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the Oregon Buttes ACEC.

Pine Springs ACEC and Proposed Expansion

Retention of the existing ACEC, and addition of acreage to encompass large concentrations of stone circle archeological sites, would be beneficial to cultural resources in the long term. Protective measures, an additional withdrawal (2,000 acres), and NSO provision on all 6,030 acres would guarantee the integrity of both the stratified archeological site at Pine Springs and the stone circle sites in the Twin Butte area.

Unauthorized uses could result in an irreversible irretrievable loss of area values. Maintenance of range improvements could have a short-term impact to area values by leaving a short-term scar that would affect the visual aspects of the stone circle sites and the Pine Springs site.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the Pine Springs area.

South Pass Historic Landscape

Designation of the area as an Historic Landscape would draw appropriate attention to the historical significance of the area. Management prescriptions for the historic trails corridor and the Historic Landscape would protect historical and visual values within the most significant portions of the region. Restrictions on geophysical exploration would help to preserve the region's historical and visual integrity. That portion of the Landscape visible from the historical trails would be an exclusion area for rights-of-way. The portion shielded by topography would be an avoidance area. These limitations on rights-of-way would be significant and would require major reroutes.

A withdrawal of 5,420 acres would ensure protection from mining claim location, and development, and NSO prescriptions on about 33,700 acres would preclude activities that could degrade visual and historic values. Designation as an ACEC would place additional constraints on locatable mineral activity. Wildfire and related suppression activities could affect visual resource values and cause additional surface disturbance. However, this disturbance is expected to be minimal.

Limiting all off-road vehicles to designated roads and trails on 33,700 acres would reduce short- and long-term impacts to cultural values. Unauthorized off-road vehicle use would adversely affect landscape values by leaving visible scars on the land that would diminish the relatively pristine nature of the historic landscape.

Considering the Expanded Impact Analysis Area: More development in the expanded impact analysis area may increase the significance of the South Pass area and its excellent visual integrity.

Special Status (Candidate) Plant Species Proposed ACEC

Known habitat and populations for the 4 special status (candidate) plant species proposed for special management designation

would total 900 acres. Management prescriptions would provide benefits to the special status (candidate) plant species and their habitat. Wildfire and related suppression activities, areas where livestock concentrate (salting and watering), chemical control of noxious weeds, geophysical activity in potential habitat areas, off-road vehicle use, increased recreation use, trampling by wild horses, and conversions of sheep to cattle all could contribute to an irreversible irretrievable loss of the plant populations. Additional restrictions on geophysical activity, off-road vehicle use, fire suppression activities, and a proposed withdrawal would reduce the level of impact. Grandfathered mining claim activity and unauthorized uses could create an unavoidable adverse impact and could result in an irretrievable loss of plant populations.

The proposed 1,900-acre land acquisition would benefit populations of *Descurainia torulosa*.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to special status plant species areas.

Steamboat Mountain Proposed Area

The Proposed Plan would provide the greatest benefit in the long term, other than Alternative C, to the wildlife and wildlife habitat within the area. However, development and other activities within the Steamboat Mountain Area and surrounding areas may permanently displace 300 to 400 of the 600 elk in the Steamboat/Sands elk herd and could alter and reduce the ability to maintain this herd objective. Human and increased activity in this desert environment could disrupt elk for a distance of 3 miles or until out of sight. Most of the Steamboat/Sands elk calving habitats (87 percent) and deer parturition areas are within high potential development areas. An estimated 67,700 acres of crucial elk and deer winter range could be affected. Effects from surface disturbing and human development activity such as that associated with off-road vehicle use, recreation, or development of coal, oil and gas, and coalbed methane within this region could result in the inability to maintain the elk and deer herds. Increased human activity could also result in potential loss of unique sagebrush habitats on and around Steamboat Mountain. However, with the proposed management designed to decrease human activities, impacts to wildlife (particularly big game species) in this area could be greatly diminished.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the Steamboat Mountain area.

White Mountain Petroglyphs ACEC

The Proposed Plan would protect the rock art and surrounding 500 acres which would address Native American traditional cultural and religious concerns. No development would be allowed unless it were for the benefit of the cultural resource. Long-term benefits would be realized by restricting any activity that could degrade the site. Benefits would also be provided to the public and especially the local communities through the educational opportunities provided by the area. Unauthorized uses could damage rock art and impact area values.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the White Mountain Petroglyphs area.

Other Management Areas

Monument Valley Area

Managing cultural resources under standard Section 106 compliance procedures should prevent any significant cultural resources from being impacted, without appropriate mitigation and consultation within the compliance process. The area would remain a target area for further Class II level cultural resources inventory should funds become available for that purpose. Required inventory for paleontological resources and appropriate stipulations would also prevent loss of scientific data or significant fossil resources.

Some long-term impacts may occur to soils, slopes, and visual values due to activities on adjacent private lands requiring access across public lands. Silt production and sedimentation would occur; however, this would be minor. Measures to control erosion, such as restricting surface disturbance on slopes greater than 25 percent and on erosive soils and restricting off-road vehicle travel to designated roads and trails, should lessen these impacts and should benefit watershed and vegetation resources.

The oil shale withdrawal would be retained until a paleontological survey was completed and an area withdrawn to protect scientific resources. Those lands not a part of the new withdrawal would be open to mineral location benefitting mineral exploration.

Unauthorized use could continue and result in an irretrievable loss of soil, cultural, and paleontological resources. Management of the area would provide for solitude and dispersed recreation but no additional facilities would be provided. Management of wild horses would benefit area values. Oil and gas management and production would benefit in the short and long term.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the Monument Valley area.

Pine Mountain Management Area

Watershed values, vegetation, recreation uses, and wildlife habitat would benefit by implementing the proposed management prescriptions for the area. Particularly, managing surface disturbing activities to avoid this area and limiting off-road vehicles use to designated roads and trails would help to retain the integrity of the setting and continued use of the area by recreationists; would help retain the useability of wildlife habitat and limit habitat fragmentation; and would retain sufficient vegetative cover to control most runoff and erosion, maintaining the health of the watershed.

These prescriptions would not eliminate opportunities for development; however, the level of development (acres disturbed at one time and actual locations of facilities) would be constrained. This may increase the costs of construction and development. In the short term, production of mineral resources and other surface disturbing development would be affected. Development may be achieved in increments and not all at once, thus it could take longer to fully extract minerals.

Constraints on developments would have the same effect on proposed livestock and recreation facilities such as reservoirs, fences and spring developments for livestock and site developments for recreation.

Management of groundwater recharge areas; and prescriptions for protecting or enhancing live water, management of livestock

grazing, vegetation, and riparian areas would maintain or improve surface and groundwater quality.

Retaining forest cover and healthy forests would continue the "snowfence effect" which increase snow catchment, infiltration, and groundwater recharge.

Limiting off-road vehicle use to designated roads and trails would constrain vehicle access to some of the area.

Four J Basin Portion

The vegetation resource would benefit from the management actions proposed in the Four J Basin. Limitation of occupancy and surface disturbance would limit further disturbance of vegetation communities. Present vegetation conditions would recover due to livestock grazing management practices and reservation of forage for watershed protection purposes.

Due to the steep slopes, unstable soils, the steep drainage, and the existing headcutting occurring, additional surface disturbance activity could create severe impacts to soils and the watershed by increasing runoff and related erosion. However, management prescriptions such as limiting occupancy, zero runoff designs, and proper road routing and construction techniques would reduce or eliminate these affects. Surface disturbing activities would be curtailed in this area and maximum development of resources could not occur if they involved intensive surface disturbance. Intense development could not occur in this area due to the drainage, soils, and steep slopes adjacent to the drainage. Management would increase the costs for development, and some development such as that associated with full infill oil and gas development would not occur.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the Pine Mountain area.

Red Desert Watershed Area

Management prescriptions in areas such as the proposed South Pass Historic Landscape and special status plant species areas would provide benefits for resources in those portions of the area. Management prescriptions for the remainder of the area would allow some development activities which could cause localized adverse effects; however, these would not have a significant impact on the watershed.

Cultural resources would be adequately managed under the Section 106 compliance procedures which would prevent any significant effects to cultural resources.

Long-term impacts could occur to visual values from the construction of facilities. However, most activity is anticipated to occur in the southern checkerboard portion adjacent to and outside the area, and visual impacts would be localized to this area. Off-road vehicle use would be limited to designated roads and trails which would reduce erosion and visual degradation. Development activities remove vegetation creating a short-term loss of the vegetation resource with some long-term loss of shrubs as restoration may require 20 years or longer. Impacts to vegetation affects available AUMs for livestock, horses, and wildlife habitat. The amount affected would not be significant.

Management under the Proposed Plan would maximize opportunity for solitude and dispersed recreation. No significant adverse impacts would occur to the recreationist.

Approximately 10 wells would be drilled in the area, and both short- and long-term impacts would be minimal. Coal mining in relation to the Bridger Mine and Deadman Wash proposed project would affect only a small portion of the watershed.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the Red Desert Watershed Management Area.

Sugarloaf Basin Management Area

Watershed values, vegetation, recreation uses, and wildlife habitat would benefit by implementing the proposed management prescriptions for the area. Particularly, managing surface disturbing activities to avoid this area and limiting off-road vehicles use to designated roads and trails would help to retain the integrity of the setting and continued use of the area by recreationists; would help retain the useability of wildlife habitat and limit habitat fragmentation; and would retain sufficient vegetative cover to control most runoff and erosion, maintaining the health of the watershed.

These prescriptions would not eliminate opportunities for development; however, the level of development (acres disturbed at one time and actual locations of facilities) would be constrained. This may increase the costs of construction and development. In the short term, production of mineral resources and other surface disturbing development would be affected. Development may be achieved in increments and not all at once, thus it could take longer to fully extract minerals.

Constraints on developments would have the same effect on proposed livestock and recreation facilities such as reservoirs, fences and spring developments for livestock and site developments for recreation.

Management of groundwater recharge areas; and prescriptions for protecting or enhancing live water, management of livestock grazing, vegetation, and riparian areas would maintain or improve surface and groundwater quality.

Retaining forest cover and healthy forests would continue the "snowfence effect" which increase snow catchment, infiltration, and groundwater recharge.

Limiting off-road vehicle use to designated roads and trails would constrain off-road vehicle access to some of the area.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to the Sugarloaf Basin area.

Wild and Scenic Rivers

Designation and interim management prescriptions would provide a beneficial impact and protect wild and scenic river values on the Sweetwater River for the long term. Some impacts may occur from mining claim activity, but the probability is slight.

Considering the Expanded Impact Analysis Area: No additional effects would occur either to or from the expanded analysis area relative to Wild and Scenic Rivers management.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
CULTURAL	Approximately 10,300 acres of significant cultural sites would be closed to surface disturbing activities.	Approximately 6,700 acres of significant cultural sites would be closed to surface disturbing activities.	Approximately 4,500 acres of significant cultural sites would be closed to surface disturbing activities	Approximately 64,000 acres of significant cultural sites would be closed to surface disturbing activities.
	About 403 miles and 128,960 acres within 1/4 mile either side of historic trails would be avoidance areas for surface disturbing activities.	Same as Proposed.	Same as Proposed.	About 403 miles and 300,160 acres within 1/2 mile either side of historic trails would be avoidance areas for surface disturbing activities.
	Exchanges would be pursued for approximately 280 acres.	Exchanges would be pursued for approximately 40 acres.	Same as Alternative A.	Same as Alternative A.
	Approximately 16,000 acres of public lands would be managed to protect the natural and geologic features of Steamboat Mountain and Boars Tusk-Killpecker Sand Dunes.	No similar action.	Same as Alternative A.	Same as Proposed.
	The average density of archeological sites would be 3.2 sites per 640 acres. About one-third of those sites would prove significant in terms of National Register of Historic Places criteria.	Same as Proposed.	Same as Proposed.	Same as Proposed.
FIRE	An average of 100 acres would be burned each year.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
FORESTS	About 4,000 acres in the Wind River Front would be managed for commercial forest use and about 3,900 acres on Pine and Little Mountains would be managed for other resource uses.	About 7,900 acres in the Wind River Front and on Pine and Little Mountains would be managed for commercial forest uses.	Same as Alternative A.	No forest acres would be managed for commercial forest uses.
	500,000 board feet per year would be harvested.	Between 500,000 and 1,000,000 board feet per year would be harvested.	1,000,000 board feet per year would be harvested.	Same as Proposed.
	Harvest activity would be restricted on about 4,370 acres to alleviate adverse effects to wildlife and watershed values.	Same as Proposed.	Harvest activity would be restricted on about 255 acres to alleviate adverse affects to wildlife habitat and watershed values.	Harvest activity would be restricted on approximately 4,770 acres to alleviate adverse affects to wildlife and watershed values.
	Approximately 128,000 acres of woodland forests would be managed for other resource values such as watershed, recreation, and wildlife habitat values.	Same as Proposed.	Approximately 128,000 acres of woodland forests would be managed for forest products.	Same as Proposed.
LANDS	Approximately 24,528 acres would be sold or exchanged.	Approximately 9,000 acres would be sold or exchanged.	Same as Proposed.	Same as Proposed.
	About 28,182 acres would be acquired.	About 34,450 acres would be acquired.	About 33,420 acres would be acquired.	About 22,020 acres would be acquired.
	Identified right-of-way windows would be 1/2 mile wide.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LANDS (continued)	Approximately 573,980 acres would be avoidance areas for rights-of-way.	Approximately 274,730 acres would be avoidance areas for rights-of-way.	Approximately 245,840 acres would be avoidance areas for rights-of-way.	Approximately 707,040 acres would be avoidance areas for rights-of-way.
	Approximately 119,710 acres would be exclusion areas for rights-of-way.	Approximately 3,580 acres would be exclusion areas for rights-of-way.	Approximately 1,960 acres would be exclusion areas for rights-of-way.	Approximately 305,360 acres would be exclusion areas for rights-of-way.
	An average of 300 permits, 4 leases, and 1,915 rights-of-way would be issued over 20 years.	An average of 200 permits, 2 leases, and 1,667 rights-of-way would be issued over 20 years.	An average of 100 permits, 1 lease, and 1,839 rights-of-way would be issued over 20 years.	An average of 300 permits, 4 leases, and 1,452 rights-of-way would be issued over 20 years.
	About 10,538 acres would be disturbed over 20 years and 7,000 acres would be reclaimed with a net long-term disturbance of 3,538 acres.	About 8,325 acres would be disturbed and 6,500 acres would be reclaimed with a net long-term disturbance of 1,825 acres.	Same as Proposed.	About 7,493 acres would be disturbed and 7,000 acres would be reclaimed with a net long-term disturbance of 493 acres.
LANDS *Classifications*	About 261,764 acres of new withdrawals would be obtained.	About 35,000 acres of new withdrawals would be obtained.	Same as Alternative A.	About 258,234 acres of new withdrawals would be obtained.
	About 3.5 million acres of withdrawals would be revoked and about 5,266 acres of existing withdrawals would remain in effect.	About 3.5 million acres of existing withdrawals would remain in effect.	Same as Proposed.	Same as Proposed.
	About 200 acres of Multiple Use Management Classification on public lands would be revoked.	About 200 acres of Multiple Use Classification would remain in effect.	Same as Proposed.	Same as Proposed.
	The 21,368 acres of public water reserves would be canceled.	About 25,608 acres of public water reserves would be retained.	Same as Proposed.	Same as Proposed.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LANDS *Classifications* (continued)	About 300 acres of easements would be obtained.	Same as Proposed.	Same as Proposed.	Same as Proposed.
LIVESTOCK GRAZING MANAGEMENT	Anticipated actual grazing use based on a 5-year average would be about 180,000 AUMs but the potential could reach 318,647 AUMs.	Anticipated actual use would be the recognized active preference (318,647 AUMs).	Anticipated actual use would increase to 413,147 AUMs.	Anticipated actual use would be about 180,000 to 200,000 AUMs.
	About 1,900 acres of special management exclosures would be closed to livestock grazing.	Same as Proposed.	About 1,900 acres of special management exclosures would be open to livestock grazing.	Same as Proposed.
	Livestock grazing would be managed on 31 I category allotments, 18 M category, and 29 C category allotments.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	An estimated 6 water wells, 20 miles of water pipeline, 36 reservoirs, 2 spring developments, 43 miles of fence reconstruction, and 10 troughs would be required to implement nine new AMPs and 10 existing AMPs.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Approximately 27 miles of new fence would be built.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LIVESTOCK GRAZING MANAGEMENT (continued)	Approximately 747 acres would be disturbed by the construction of fences, pipelines, water wells, troughs, and reservoirs.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Vegetation would be reestablished along fences and pipelines within 3 to 5 years. Sites of water wells, troughs, and reservoirs (approximately 77 acres) would remain disturbed for the long term (10 to 20 years) and would be revegetated upon abandonment.			
	Prescribed burns would cause a loss of vegetation for a period of one to two years and a change in vegetation for 15 to 30 years.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Burn areas would be rested from livestock grazing for the first two growing seasons following prescribed burns.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 15,100 acres of unallocated forage would be considered for allocation to various resources, including livestock grazing.	Same as Proposed.	Same as Proposed.	About 15,100 acres of unallocated forage would be not considered for allocation to livestock grazing.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
LIVESTOCK GRAZING MANAGEMENT (continued)	The Henrys Fork allotment would be split into 3 allotments. The Cottonwood Creek and Antelope Wash areas would be consolidated into one 2-pasture allotment.	Same as Proposed.	Same as Proposed.	Same as Proposed.
MINERALS	About 5,800 acres in incorporated cities and towns would remain closed to leasing for all leasable minerals.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 225,110 acres of WSAs would remain closed to leasing for all leasable minerals.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Oil and Gas	Areas of no lease would apply to about 152,460 acres of Federal mineral estate.	Areas of no lease would apply to about 24,840 acres of Federal mineral estate.	Areas of no lease would apply to about 1,860 acres of Federal mineral estate.	Areas of no lease would apply to about 168,500 acres of Federal mineral estate.
	No surface occupancy constraints would apply to about 79,120 acres.	No surface occupancy constraints would apply to about 110,480 acres.	No surface occupancy constraints would apply to about 9,675 acres.	No surface occupancy constraints would apply to about 605,600 acres.
	Timing limitations would apply to about 1,954,560 acres to protect wildlife resources.	Timing limitations would apply to about 2,321,930 acres to protect wildlife and livestock resources.	Timing limitations would apply to about 361,330 acres to protect wildlife resources.	Timing limitations would apply to about 2,330,830 acres to protect wildlife resources.
	Controlled surface use constraints would be placed on 1,189,340 acres.	Controlled surface use constraints would be placed on 944,210 acres.	Controlled surface use constraints would be placed on 1,050,420 acres.	Controlled surface use constraints would be placed on 1,104,200 acres.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Oil and Gas (continued)	Productive gas wells would have a 20-year life. Productive oil well would have a 50-year life.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Each gas well would produce 159.6 million cubic feet of gas per year. Each producing oil well would produce 5,643 barrels per year.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 1,300 wells would drilled by the year 2010.	About 1,328 wells would be drilled by the year 2010.	About 2,485 wells would be drilled by the year 2010.	About 1,296 wells would be drilled by the year 2010.
	About 24,310 acres would be disturbed by the year 2010. About 14,325 acres would be stabilized with a net long-term disturbance of 9,985 acres.	About 24,620 acres would be disturbed by the year 2010. About 14,537 acres would be stabilized with a net long-term disturbance of 10,092 acres.	About 37,674 acres would be disturbed by the year 2010. About 22,139 acres would be stabilized with a net long-term disturbance of 15,535 acres.	About 24,263 acres would be disturbed by the year 2010. About 14,293 acres would be stabilized with a net long-term disturbance of 9,970 acres.
(Considering the Expanded Impact Analysis Area)[2]	About 1,558 wells would be drilled outside the planning area for a total of 2,858 wells in the expanded analysis area.	About 1,558 wells would be drilled outside the planning area for a total of 2,886 wells in the expanded analysis area.	About 2,915 wells would be drilled outside the planning area for a total of 5,400 wells in the expanded analysis area.	About 1,558 wells would be drilled outside the planning area for a total of 2,854 wells in the expanded analysis area.
Coalbed Methane	About 250 coalbed methane wells would be drilled by the year 2000.	About 37-300 coalbed methane wells would be drilled by the year 2000.	About 300 coalbed methane wells would be drilled by the year 2000.	Same as Proposed.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Coalbed Methane (continued)	About 3,150 acres would be disturbed by the year 2000. About 1,927 acres would be stabilized with a net long-term disturbance of 1,223 acres.	About 325 acres to 3,780 acres would be disturbed by the year 2000. About 292 acres to 2,329 acres would be stabilized with a net long-term disturbance of 33 acres to 1,451 acres.	About 3,780 acres would be disturbed by the year 2000. About 2,329 acres would be stabilized with a net long-term disturbance of 1,451 acres.	Same as Proposed.
Coal	About 276,200 acres of crucial wildlife ranges would be open for coal leasing and incremental development.	No similar action.	About 276,200 acres of crucial wildlife ranges would be open to coal leasing and development.	About 276,200 acres of crucial wildlife ranges would be closed to coal leasing.
	About 25,765 acres in the Cooper Ridge-Elk Butte areas would require further study prior to leasing.	Same as Proposed.	Same as Proposed.	About 25,765 acres in the Cooper Ridge-Elk Butte areas would be closed to coal leasing.
	About 13,340 acres of Federal coal lands, containing important petroglyph sites, other important cultural resource values, and important geologic and ecologic features, would be open to further consideration for leasing and development for subsurface mining methods only.	No similar action.	About 3,010 acres of Federal coal lands, containing important petroglyph sites, other important cultural resource values, and important geologic and ecologic features, would be open to further consideration for leasing and development for subsurface mining methods only.	About 25,952 acres of Federal coal lands, containing important petroglyph sites, other important cultural resource values, and important geologic and ecologic features, would be closed to further consideration for leasing and development.
	About 12,200 acres of Federal coal lands within the City of Rock Springs Expansion Area would be closed to further consideration for coal leasing.	About 1,500 acres of Federal coal lands within the City of Rock Springs Expansion Area would be closed to further consideration for coal leasing and development.	About 12,200 acres of Federal coal lands within the City of Rock Springs Expansion Area would be open to further consideration for coal leasing.	Same as Proposed.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Coal (continued)	About 2,000 acres of wetland and riparian areas would be open to consideration for coal leasing and development.	No similar action.	Same as Proposed.	About 2,000 acres of wetland and riparian areas would be closed to coal leasing.
	About 29,000 acres of BLM-administered public land surface overlying state-owned coal would be open to further consideration for coal leasing.	No similar action.	Same as Proposed.	About 29,000 acres of BLM-administered public land surface overlying state-owned coal would be closed to further consideration for coal leasing.
	Four existing mines (Bridger, Black Butte/Pit 22, Pilot Butte, and Lion Coal) would continue to operate.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	Two new mining operations (Deadman Wash and Elk Butte) would begin prior to 2010.	Same as Proposed.	Four new mining operations (Deadman Wash, Elk Butte, Cooper Ridge, and Deer Butte) would begin prior to 2010.	No new mining operations would begin.
	About 27,358 acres would be disturbed, and 17,880 acres would be reclaimed with a net long-term disturbance of 9,478 acres.	Same as Proposed.	About 28,908 acres would be disturbed, and 18,430 acres would be reclaimed with a net long-term disturbance of 10,478 acres.	About 24,478 acres would be disturbed, and 15,790 acres would be reclaimed with a net long-term disturbance of 8,688 acres.
Sodium (Trona)	One additional mining operation would begin prior to 2010.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 61 acres would be disturbed, all of which would be reclaimed.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Locatable Minerals	Up to 10 new mining claims would be filed each year.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
Locatable Minerals (continued)	Up to 10 acres per year would be disturbed by exploration activity.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	One gold mine and one jade mine would be developed. Disturbance over the life of these mines would be 59 acres, all of which would be reclaimed.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	One zeolite mine would be developed. Disturbance over mine life would be 205 acres, all of which would be reclaimed.	No zeolite mine would be developed.	Same as Proposed.	Same as Proposed.
Mineral Materials	Requests for mineral materials would range from 31,000 to 850,000 cubic yards a year.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 1,080 acres would be disturbed from mineral material activity.	Same as Proposed.	Same as Proposed.	Same as Proposed.
Geophysical	About 9,652 acres would be closed to the use of explosive charges.	About 3,262 acres would be closed to the use of explosive charges.	Same as Alternative A.	About 3,597 acres would be closed to the use of explosive charges.
ORV MANAGEMENT	About 10,500 acres in the Sand Dunes would remain open to ORV use.	About 11,964 acres in the Sand Dunes would remain open to ORV use.	About 5,500 acres in the Sand Dunes would remain open to ORV use.	Same as Proposed.
	Approximately 172,160 acres would be closed to off-road vehicle use to protect naturalness, solitude, and opportunities for unconfined recreation.	No similar action.	Same as Proposed.	Same as Proposed.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
ORV MANAGEMENT (continued)	About 9,410 acres would be closed to off-road vehicle travel to protect other resource values.	About 10,220 acres would be closed to off-road vehicle travel to protect other resource values.	About 13,450 acres would be closed to off-road vehicle travel to protect other resource values.	About 45,270 acres would be closed to off-road vehicle travel to protect other resource values.
	About 127,120 acres would have seasonal restrictions applied to off-road vehicle travel on an as-needed basis to protect big game birthing areas.	About 18,530 acres would have seasonal restrictions applied to off-road vehicle travel on an as-needed basis to protect big game birthing areas.	No seasonal restrictions would apply to off-road vehicle travel in big game birthing areas.	Same as Proposed.
	About 1,500,000 acres would have seasonal restrictions applied to off-road vehicle travel on an as-needed basis to protect wintering big game.	About 88,510 acres would have seasonal restrictions applied to off-road vehicle travel on an as-needed basis to protect wintering big game.	No seasonal restrictions would apply to off-road vehicle travel to protect wintering big game.	Same as Proposed.
	About 835 acres would have seasonal restrictions applied to off-road vehicle travel on an as-needed basis to protect nesting raptors.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 1,006,335 acres would be limited to designated roads and trails for off-road vehicle travel.	About 426,954 acres would be limited to designated roads and trails for off-road vehicle travel.	About 1,320 acres would be limited to designated roads and trails for off-road vehicle travel.	About 425,090 acres would be limited to designated roads and trails for off-road vehicle travel.
	About 2,436,595 acres would be limited to existing roads and trails for off-road vehicle travel.	About 3,185,880 acres would be limited to existing roads and trails for off-road vehicle travel.	About 3,442,570 acres would be limited to existing roads and trails for off-road vehicle travel.	About 2,981,980 acres would be limited to existing roads and trails for off-road vehicle travel.
RECREATION	Visitor use days would increase by about 3 percent per year.	Visitor use days would remain constant.	Visitor use days would increase by about 4 percent per year.	Visitor use days would increase by about 2 percent per year.
SOCIOECONOMICS	Prices would remain constant for all commodities.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
SPECIAL STATUS (CANDIDATE) PLANT SPECIES MANAGEMENT	About 3,610 acres would be open to oil and gas leasing with no surface occupancy.	About 3,610 acres would be closed to oil and gas leasing.	About 3,610 acres would be open to oil and gas leasing with no surface occupancy.	Same as Alternative A.
	About 3,610 acres would be withdrawn from mineral location.	About 3,610 acres would be open to mineral location.	Same as Alternative A.	Same as Proposed.
VEGETATION	About 67,700 acres would be treated.	About 26,700 acres would be treated.	About 290,000 acres would be treated.	About 41,000 acres would be treated.
VRM	About 681,560 acres would be managed for Class II visual resource management classification.	About 423,000 acres would be managed for Class II visual resource management classification.	About 390,000 acres would be managed for Class II visual resource management classification.	About 500,000 acres would be managed for Class II visual resource management classification.
	About 632,370 acres would be managed for Class III visual resource management classification.	About 330,000 acres would be managed for Class III visual resource management classification.	About 215,000 acres would be managed for Class III visual resource management classification.	About 328,000 acres would be managed for Class III visual resource management classification.
	About 2,251,810 acres would be managed for Class IV visual resource management classification.	About 2,858,000 acres would be managed for Class IV visual resource management classification.	About 3,006,000 acres would be managed for Class IV visual resource management classification.	About 2,783,000 acres would be managed for Class IV visual resource management classification.
	About 24,160 acres in rehabilitation areas would be improved to a higher visual classification.	Same as Proposed.	Same as Proposed.	Same as Proposed.
WATERSHED	About 95,550 acres of wetlands and floodplains would be managed in accordance with executive orders 11988 and 11990.	Same as Proposed.	Same as Proposed.	Same as Proposed.

TABLE 4-1

ASSUMPTIONS FOR ANALYSIS[1]
(approximate acreage and numbers)

RESOURCE	PROPOSED PLAN	ALTERNATIVE A (No Action Alternative)	ALTERNATIVE B	ALTERNATIVE C
WATERSHED (continued)	About 188,090 acres of steep slopes would be avoidance areas for surface disturbing activities.	Same as Proposed.	Same as Proposed.	Same as Proposed.
WILD AND SCENIC RIVERS	The wild and scenic river review process was conducted and the findings of eligibility and suitability were included in this alternative.	The wild and scenic river review process was not conducted and no findings of eligibility or suitability occurred and were not included in this alternative.	Same as Proposed.	Same as Proposed.
WILD HORSES	There would be a 20% annual increase in wild horses. Gathering would take place every 2 years.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 30 acres would be disturbed developing wild horse traps.	Same as Proposed.	Same as Proposed.	Same as Proposed.
	About 15 controlled water developments (i.e., wells) would be developed.	No water developments would be constructed.	Same as Proposed.	Same as Proposed.
WILDLIFE	Fences documented to be a problem to big game migration would be modified to meet BLM standards within 4 years.	Problem fences would be documented but no time frames would be set for modification.	Same as Alternative A.	Fences documented to be a problem to big game migration would be removed as soon as possible.
	Human disturbance would displace elk for up to 3 miles.	Same as Proposed.	Same as Proposed.	Same as Proposed.

[1]Also see Appendix 12-1 for a more detailed discussion of assumptions used for analysis.

[2]The basic assumptions for the other resources are the same as described for the planning area.

TABLE 4-2
ACTIVITIES WHICH AFFECT AIR QUALITY
AND
TYPICAL EMISSION FACTORS FOR EACH

ACTIVITY	POLLUTANT	EMISSION FACTOR
Coal Mining	PM-10	30-100 lb/yr/acre disturbed 1-3 lb//VMT 1.5-15 lb/blast 0.001-0.01 lb/ton coal mined
	TSP	100-300 lb/yr/acre disturbed 2-10 lb/VMT 5-50 lb/blast 0.002-0.03 lb/ton coal mined
Oil & Gas Activity	Nitrogen Oxide	0.0 lb/yr/drill
	Sulfur Dioxide	0-1.5 ton/yr/flare
	PM-10	0.0 lb/yr/drill or pump
	Hydrogen Sulfide	0-0.15 lb/yr/well
Gas Sweetening Plants	Sulfur Dioxide	0-150 ton/yr
	Hydrogen Sulfide	0.15 ton/yr
Trona Leasing	PM-10	30-100 lb/yr/acre stockpile tons/yr/plant
	TSP	100-300 lb/yr/acre stockpile 700-1500 tons/yr/plant
Prescribed Burning	PM-10	8-32 lb/ton burned
	TSP	10-40 lb/ton burned

TABLE 4-3
MAJOR AIR POLLUTION EMISSION SOURCES

Name	Type	Emission Rates (tons/year)				
		PM10	TSP	SO_2	NO_x	CO
Amoco Beaver Creek	NGP				544	83
Louisiana Land & Exp	NGP					
K N Energy (Sand Dr)	NGT				123	26
Lig Lost Cabin Co	NGT				60	8
Snyder Oil Corp	NGP			2,010	303	39
Koch Sulfur Prod Co	SAP	2		1,104	4	
PPL Bridger*	CPP	2,199		20,091	25,401	2,288
General Chemical	TPP	761		5,245	3,596	82
FMC Soda Ash*	TPP	1,160		4,317	3,343	
TexasGulf Trona*	TP	246		475	2,822	
Solvay Minerals	TP	227		99	2,063	237
Rhône-Poulenc*	TP	759		1	543	
Church & Dwight	TP	52				
Union Pacific-Brady*	NGP	1		415	1,403	198
UP Resources*	NGP	1		1	610	85
CIG Table Rock*	NGP	2		522	68	9
NW Pipeline*	NGT				421	54
Williams, Riner Stn	NGT	1			126	33
CIG Desert Spring*	NGT				206	35
Questar Coleman*	NGT			1	114	50
CIG Wamsutter Stn	NGT				169	59
Western Gas/Blue Forest*	NGT				114	86
Questar, Nightingale*	NGT			1	102	22
Marathon Oil Baxter*	NGT				28	
Questar (S. Baxter)*	NGT				70	
Black Butte Coal*	SCM		453			
Black Butte Leucite*	SCM	1	121			
Sweetwater Resources	CP	53		933	86	
SF Phosphates*	PP	26		577	169	20
NW Pipeline/Big Piney	NGT				1,083	225
Chevron/Birch Creek	NGT				52	80
Exxon Dehydrator	DP	1		65	12	4
Total		**5,492**	**574**	**35,857**	**43,635**	**3,723**

* Indicates source within Green River Resource Area. All others within Sweetwater, Sublette, and Fremont counties.

NGP = Natural Gas Processing
NGT = Natural Gas Transport
SAP = Sulfuric Acid Plant
CPP = Coal-fired Power Plant
TPP = Trona Processing Plant
SCM = Surface Coal Mine
CP = Coking Plant
PP = Phosphate Plant
DP = Dehydration Plant

Source: Wyoming Department of Environmental Quality, Air Quality Division Database, 1993.

TABLE 4-4

SUMMARY OF IMPACTS TO WILDLIFE

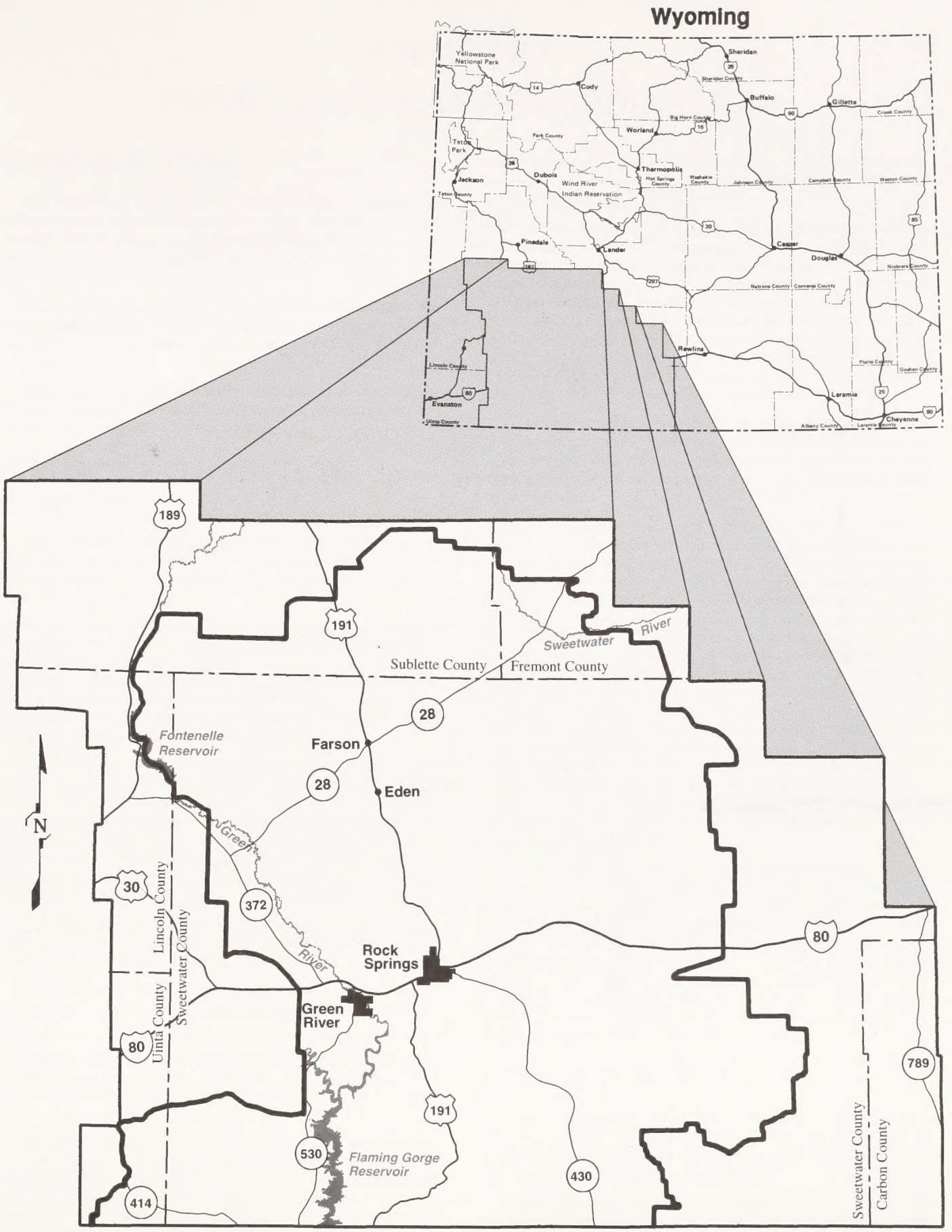
(ESTIMATES)

Impact	Proposed Plan	Alternative A	Alternative B	Alternative C
Big game habitat losses (acres)	45,411	46,174	58,509	42,560
Crucial winter range losses (fluids) (acres)	7,230	7,320	15,625	7,216
Big game habitat loss (acres)	143,000	162,159	183,892	143,000
Raptor habitat loss (may overlap with big game losses) (acres)	15,050	15,050	17,500	10,000
Number of raptor nests lost or unsuitable (mineral activity)	432	453	483	353
Crucial winter range loss/displacement potential for antelope in KSLA (trona) (%)	3	3	5	3
Sage grouse habitat loss (fluids, may overlap big game) (acres)	1,160	1,160	1,600	900
Geophysical effect on big game habitat (linear, short term, miles)	840	865	1,000	700
Potential stream habitat affected (locatable) (miles)	150	150	150	150
Irretrievable lands disposals (may be offset partially by acquisitions) (acres)	13,525	9,605	13,705	13,525

TABLE 4-5

IMPACTS TO BIG GAME BY HERD UNIT

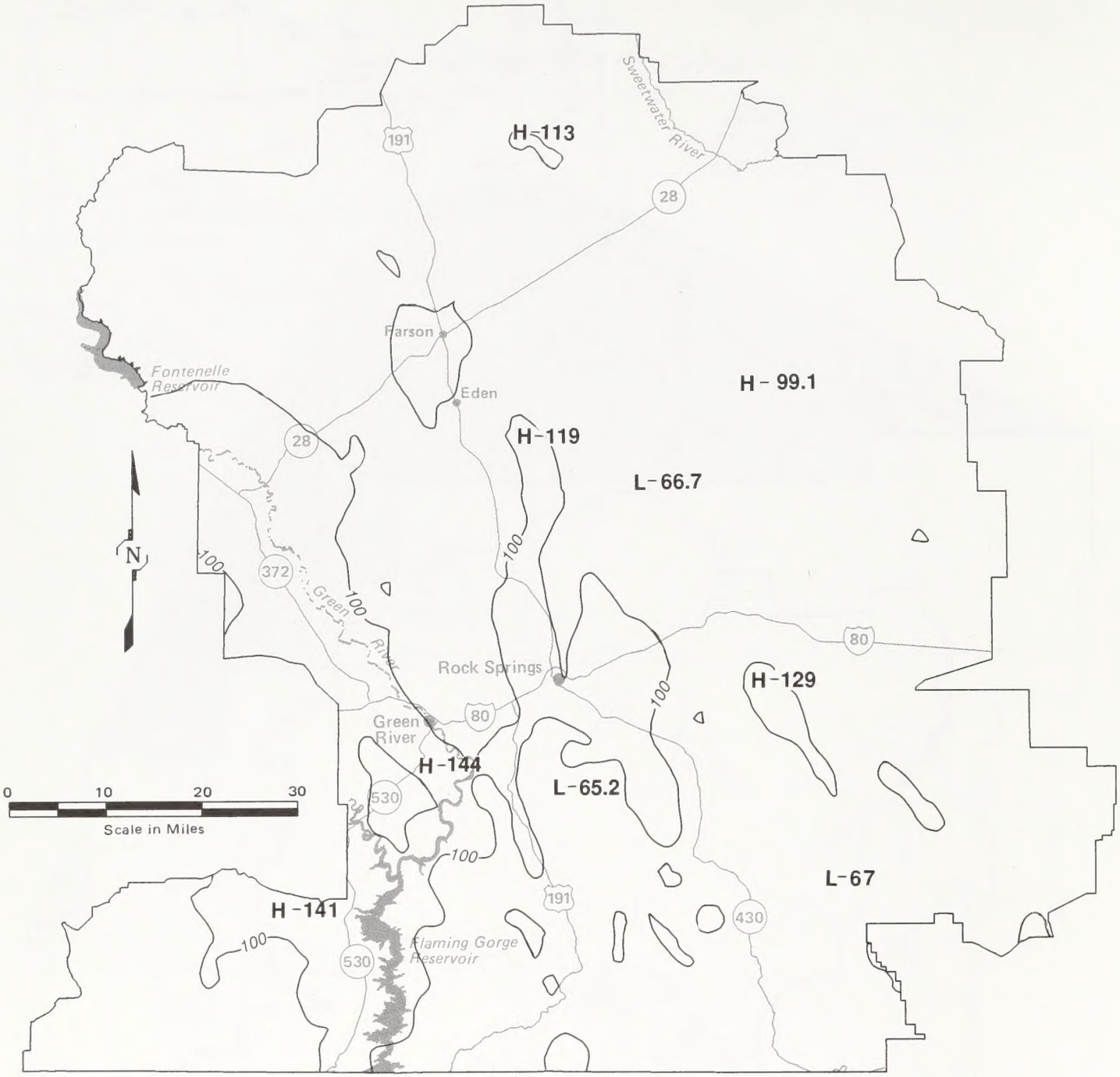
Herd Unit	Objective Population	Capability of Habitat to Meet Herd Unit Objective Levels May be Significantly Affected (Yes or No)
Antelope		
Bitter Creek	11,000	No
Red Desert	12,000	No
South Rock Springs	4,000	No
Sublette	30,000	Yes
Uinta-Cedar Mountain	5,500	No
West Green River	3,000	No
Elk		
Pinedale	1,900	Yes
Piney	2,424	Yes
South Rock Springs	600	No
South Wind River	3,300	No
Steamboat	500	Yes
Uinta-Cedar Mountain	600	No
Upper Green River	2,500	Yes
West Green River	3,100	No
Moose		
Lander	325	No
Lincoln	1,500	No
Sublette	5,500	No
Uinta-Cedar Mountain	600	No
Mule Deer		
Baggs	18,700	No
South Rock Springs	11,750	No
South Wind River	13,000	No
Steamboat	4,000	Yes
Sublette	12,500	No
Uinta-Cedar Mountain	7,000	No
Wyoming Range	37,000	Yes



Map 74

Expanded Impact Analysis Area

Green River Resource Management Plan



Map 75

Climatological Pollution Potential

Green River Planning Area

CHAPTER 5

CONSULTATION AND COORDINATION

INTRODUCTION

The Green River RMP EIS was prepared by an interdisciplinary team of specialists from the Green River Resource Area, the Rock Springs District Office, and the Wyoming State Office (Table 5-1). Reviews and accuracy and consistency were provided by both the district office and the state office staffs.

Consultation, coordination, and public involvement have occurred throughout the process through public meetings, informal meetings, individual contacts, news releases, and *Federal Register* notices.

Initial steps in the process began in 1988 with the development of a preparation plan. Other early efforts included research, inventory, analysis, and interagency coordination.

PUBLIC PARTICIPATION SUMMARY

A public participation plan was prepared to ensure that the public would have numerous opportunities to be actively involved in the planning and environmental process. Formal and informal input has been encouraged and used.

As part of the ongoing consultation and coordination, the BLM has prepared a biological assessment for threatened and endangered species. A biological opinion has been issued by the U.S. Fish and Wildlife Service and is published at the end of the comment letters. The BLM will continue to coordinate and share the results of the assessment with the USFWS, as required by Section 7 of the Endangered Species Act of 1973, as amended.

A letter was mailed in July 1989, requesting information on oil and gas resources. An "Issues Update" newsletter was mailed in October 1989 and another in November 1990. A letter was mailed in March 1990, requesting information on geologic favorability and potential for development. Open houses were held during November 1990 in Lander and Rock Springs, Wyoming. Questions and issues were handed out and over 200 responses were received. A letter was mailed in February 1991 explaining wild and scenic river criteria.

The Rock Springs District Advisory Council has been kept apprised of the RMP progress, and their comments and recommendations were solicited until the Council disbanded.

Each operator of a grazing allotment has been contacted either in person or in writing to discuss the categorization of their allotment.

BLM personnel have met formally or informally with many members of the ranching and minerals industries and with other interest groups and agencies. A summary of comments generated from these meetings and mailings is on file in the Green River Resource Area office.

The Green River RMP Draft EIS was mailed for public review and input the end of November 1992. The *Federal Register* notice announcing the availability of the Green River RMP Draft EIS was published on December 4, 1992. This initiated the 90-day comment period for review of the draft. A 45-day extension was provided resulting in a 135-day comment period ending April 19, 1993. Seven written requests were submitted and an inquiry from the congressional delegates was also forwarded for consideration of an extension. Due to the complexity and amount of material involved and to allow submission of new information, the 45-day extension was provided. Almost all of the 1,200 copies have been distributed to interested parties.

When the comment period closed, 209 comment letters had been submitted as well as 112 postcards. Twenty-six (26) letters were submitted by government agencies and representatives, 42 from business and industry, 31 from organizations and affiliations, and 110 from individuals. Some parties submitted more than one letter. Nearly all (111) of the 112 postcards received advocated discontinuing the use of M-44's for Animal Damage Control activities on public lands. One postcard was in favor of using M-44's for Animal Damage Control measures. These comments were addressed through the Rock Springs District Animal Damage Control EA (1994).

Table 5-2 provides a list of letters received. Many letters were received with common issues, thoughts, and questions. Not all the letters were printed to reduce the size of the document. One letter was chosen to represent similar letters when many letters expressed similar issues.

Approximately 11 articles appeared in local newspapers and five appearances were made on television providing information on resource management prescriptions and information in the RMP. Open houses and meetings with individuals and user groups were scheduled (see Table 5-3) to provide information and clarification on the RMP and to encourage comment, input, and information for the RMP Final EIS. Seven open houses and over 20 meetings with user groups occurred. A public hearing was held at Western Wyoming Community College with 57 people attending and 12 giving testimony. The hearing transcript is on file in the Green River Resource Area Office and the Rock Springs District Office. Over 275 people participated in this entire public outreach effort. A meeting with the Governor of Wyoming was held on September 8, 1993, to discuss public concerns. It was agreed that certain new information on oil and gas activity and revenues would be reviewed and further opportunities would be granted the public for input into the RMP Final EIS. As a result, the new information was reviewed and the final document updated where applicable.

A mailing with the proposed changes to the Preferred Alternative, that would be included in the Proposed Plan, was sent to all parties on the mailing list in October 1994. With this was a request for input and an invitation to attend additional open houses and talk to the staff. The open houses were held in Lander and Rock Springs with about 50 people attending. These open houses were mostly for information sharing. Concerns were raised about reviewing the Final EIS before it is printed, about the NSO mitigation for portions of the Greater Sand Dunes, and about application of the Proper Functioning Condition guidelines.

CONSISTENCY

Coordination with other agencies and consistency with other plans was accomplished through frequent communications and cooperative efforts between the BLM and involved federal, state, and local agencies and organizations (Table 5-4).

The Wyoming Governor's Clearinghouse receives 20 copies of the draft and final documents for review to ensure consistency with ongoing State plans. The RMP team reviewed county land use plans to ensure consistency. Meetings are held with the respective county planners and commissioners to promote greater understanding of goals, objectives, and resources of both the counties and the BLM.

CONSULTATION AND COORDINATION

Members of the RMP team have consulted formally or informally with numerous agencies, groups, and individuals in the RMP development process. The following list is representative of the businesses, agencies, organizations, and individuals who have indicated an interest in the Green River RMP and who have been contacted during the planning process. This list is not all-inclusive. A complete list is on file in the Rock Springs BLM District Office and the Green River Resource Area Office.

Meetings were held with RMOGA, Sierra Club, Friends of Wild Wyoming Deserts, and Sweetwater County representatives.

Native American Consultation

On March 29, 1989, as part of the general scoping process, letters were sent to the Arapaho, Eastern (Wind River) Shoshone, Shoshone-Bannock, and Ute tribes and to the Medicine Wheel Alliance. The letters requested information to be considered in the planning process.

As a result of these letters we received telephone communication from John Tarnesse who discussed general things of interest to the Eastern Shoshone. This discussion eventually precipitated Mr. Tarnesse's letter to the Wyoming State Office listing several kinds of cultural and natural features that were of concern to the Shoshone, in Mr. Tarnesse's opinion. Tarnesse also presented this paper at a meeting of the Wyoming Association of Professional Archaeologists. Tarnesse's list of site types of concern has become the 'baseline' for the kinds of things archaeologists expect to be of concern to the Eastern Shoshone specifically and Native Americans in Wyoming more generally.

On May 24, 1991 a letter was sent to all four tribes asking for any concerns they may be relative to the coal leasing process. This letter was specifically written to comply with requirements of the coal screening process. On June 25, 1991, a telephone call was received from Haman Wise expressing his confusion concerning the coal leasing process and also expressing a desire to tour the GRRA to look for areas that may be of concern to his tribe for traditional cultural values. As a result of this call, area archaeologist Russ Tanner arranged two tours in which Mr. Wise and Mr. Tarnesse were taken to the Tolar and White Mountain petroglyph sites, Boars Tusk, Steamboat Mountain, North Table Mountain, the Pine Canyon petroglyph site (on state land), and a possible "medicine wheel."

Following each of these field trips, Tarnesse, Wise, and Tanner met with Area Manager Bill LeBarron and discussed Native American concerns both in general and relative to several specific sites such as the rock art sites visited. Information gathered from these meetings was used in formulating management recommendations for the five major rock art sites, Boars Tusk, Steamboat Mountain, North Table Mountain, a Native American burial location (e.g., Sage Creek Mountain), a Native American stone quarry specifically as well as for general management of grave sites, flat-topped mesas, other rock art sites, stone circle sites, and typical prehistoric and historic sites.

Messrs. Wise, Tarnesse, and Bennie LeBeau also attended an open house meeting concerning the GRRA RMP in Lander on January 26, 1993. At this meeting we reviewed our management recommendations with these individuals and solicited additional comments that were used to refine management strategies.

Since 1986, Native Americans (e.g., variously Wise, Tarnesse, and Delphine Clair) have been taken on tours of sites in the Rock Springs District that could be of concern to them relative to specific proposed developments including, but not limited to the Halliburton Geophysical project (1990), Triton Coal Bed Methane Project (1992), Wold Trona Mine (1993), Northwest Pipeline (in LaBarge Bluffs area) (1993), and the Questar Birch Creek Pipeline (1994). In addition, Betsy Chapoose and Jonas Grant of the Ute Tribe were taken on a tour of the Questar Mainline 58 route in 1993.

The other tribes (Northern Arapaho and Shoshone-Bannock) are known to have had a major presence in the Green River Basin in historic times (e.g., 1650-1900) and have been invited to participate in all of these tours; however, they either did not respond to our invitation or indicated that the Eastern Shoshone could take the 'lead'.

Federal Agencies

Department of the Interior
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Mines
- Bureau of Reclamation
- Fish and Wildlife Service
- Geological Survey
- National Park Service
- Minerals Management Service
- Office of Environmental Affairs

Department of Agriculture
- Forest Service
- Soil Conservation Service

Department of Commerce
Department of Defense
Department of Energy
Department of Housing and Urban Development
Department of Transportation
Environmental Protection Agency

State of Wyoming
- Department of Environmental Quality
- Game and Fish Department
- Geological Survey of Wyoming
- Governor of Wyoming
- State Clearinghouse
- State Engineer
- State Highway Department
- State Historic Preservation Office
- Wyoming Recreation Commission
- University of Wyoming

Federal Elected Officials
- Congressman Craig Thomas
- Senator Alan Simpson
- Senator Malcolm Wallop

State Elected Officials
- Senators and Representatives of Fremont, Lincoln, Sublette, Sweetwater, and Uinta counties.

Local Governments
- County governments of Fremont, Lincoln, Sublette, Sweetwater, and Uinta counties.
- Mayors' offices of Granger, Green River, Rock Springs, and Superior.

Tribal Councils
- Arapaho and Shoshone Tribal Councils

Industry
- Arco Coal Co.
- Black Butte Coal Co.

Industry (continued)

Bridger Coal Company
Chevron USA, Inc.
Christmann and Associates
Church and Dwight Co., Inc.
Cumberland Coal Company
Exxon Company U.S.A.
FMC Wyoming Corporation
General Chemical Co.
Homestake Mining Company
Marathon Oil Co.
Minerals Exploration Corp.
Mobil Oil Corporation
Mountain Bell
Mountain Fuel Supply Co.
Nerco Inc.
Northwest Pipeline Corporation
Pacific Power
Pacificorp
Petroleum Association of Wyoming
Questar Corporation
Questar Pipeline Co.
Rhône-Poulenc of Wyoming Co.
Rocky Mountain Energy
Rocky Mountain Oil and Gas Association (RMOGA)
Texaco Inc.
Texas Gulf, Inc.
Union Pacific Railroad
Union Pacific Resources Co.
Utah Power and Light Company

Associations and Interest Groups

American Humane Association
Animal Protection Institute of America
Citizens for Survival of the Red Desert
Defenders of Wildlife
Environmental Defense Fund
Friends of Wild Wyoming Deserts
Greater Yellowstone Coalition
Independent Petroleum Association of Mountain States
Izaak Walton League
National Audubon Society
National Wildlife Federation
Natural Resources Defense Council
Northern Plains Resource Council
Oregon-California Trails Association
Public Land Foundation
Rock Springs Grazing Association
Seedskadee Audobon Society
Sierra Club
Society for Range Management
Southwest Wyoming Industrial Association
Sweetwater Economic Development Association (SWEDA)
The Nature Conservancy
WHOA
Wild Horses Yes
Wilderness Society
Wyoming Wildlife Federation

Others

Many individuals were contacted, including all range permittees and lessees in the Green River Resource Area. The comment summary, reviewer comments, and agency responses are found in Appendix 14-3.

COMMENT SUMMARY

Concerns raised at open houses, meetings with user groups, the public hearing, and written comments are summarized. Many public comments were essentially opinions in support of or in opposition to one or more management prescriptions or the resource information. The volume of the document was a concern; however, most comments indicated that more explanatory material should be included and little or nothing deleted. The result following all these requests would be to produce an even more extensive document.

1. The document is inadequate from a planning and NEPA perspective. A wide range of Alternatives was not presented and the alternatives were not complete.

1A. In particular, a full range of alternatives dealing with mineral development under the guidelines of standard terms and conditions was not discussed, providing a rationale and basis for further mitigation of mineral and particularly oil and gas activities. Productivity figures for oil and gas resources were low and should consider up to a 250 percent increase over the projections in the document. An additional alternative and modification of impact analysis may be necessary to address this potential development. The alternative should consider appropriate leasing recommendations to permit this level of development.

Response: Many alternatives were considered; however, not all were analyzed in detail in the document. Analyzing an alternative in detail that addresses standard terms and conditions was determined to be unreasonable. The first tier of the planning system includes the laws and policies that have been established to guide resource management on public lands. To implement these laws and to ensure activities conform with these laws, site specific mitigation is utilized. In recognition that compliance requires this mitigation, the alternatives were designed to include appropriate measures based upon the alternative theme. However, clarification of the application of mitigation has been included in the document and the impact analysis has been enhanced.

We re-evaluated our oil and gas production figures. One production figure was wrong and has been corrected. Additional figures have been updated with 1993 information. This re-evaluation resulted in a modified cumulative impact analysis and a change in where some projected future development would occur.

1B. Other concerns included a lack of a full range of alternatives for livestock grazing since grazing preference did not vary between alternatives. Commentors noted that the impact analysis indicated adverse affects could occur from grazing activities but no alternative looked at reducing preference, or totally eliminating all impacts from livestock grazing.

Response: Livestock grazing alternatives were designed based upon current policy. Grazing preference cannot be changed unless site-specific information is available and through site specific analysis. This data is being obtained on a site-specific allotment basis and individual decisions/recommendations will be made subsequent to this RMP. More important than the numbers identified for preference are the management prescriptions defined in the alternatives. The alternatives have been modified to include guidelines for utilization levels, particularly in the riparian areas which are key in management of allotments. Additionally, areas have been identified where livestock grazing would not occur. Only site specific areas were recommended for such action based on sensitive resource values.

1C. Finally, one comment expressed concern that no alternatives were provided to the coal unsuitability criteria.

Response: The coal criteria were applied as a management tool and common to all alternatives, and alternatives to the criteria and its application were not developed. However, application of the exceptions to the criteria did vary between alternatives.

2. Clarification of procedures on the application of site specific mitigation as defined in the Pinedale Coordinated Activity Plan protest response should be included. The criteria established for exception for big game seasonal restrictions should be more finite and better defined

Response: Clarification and rationale for mitigation are being added to the RMP Final EIS in Appendix 5-1. Clarification of application of site specific measures in conformance with the Pinedale Coordinated Activity Plan response is included in the final document.

Providing more finite criteria for exceptions to winter range and other seasonal restrictions would not be beneficial. Flexibility is necessary in applying all factors described in Appendix 5-1 in order to assess the situation site-specifically and provide good management decisions. There is no magic formula to be applied consistently to achieve a recommendation and projects, their intensity, and cumulative impacts may vary. Weather and health conditions of animals change and the procedures identified were designed to allow for flexibility to take this into account.

3. The impact analysis is incomplete and does not support the framework for the alternatives, nor provide a complete and clear listing of impacts. The presentation of cumulative affects is also unclear and incomplete. Particular concerns were identified in the analysis of mineral development, livestock grazing, and the overall description of affects to resources.

Response: The impact analysis was reviewed and parts were updated and clarified. Impacts that were common to all alternatives were placed in Appendix 12; this information clarifies some of the impacts. Additionally, the cumulative impact analysis for each alternative is being reviewed and reconstructed. This analysis considers activities occurring in a larger area than the Green River Resource Area, and new projects initiated since the draft was published. However, site specific and quantitative impacts cannot be determined for all actions due to a lack of resource data and incomplete information.

4. The trona/oil and gas conflict was not discussed in the draft document and should be included in the discussion of mineral activities in the final document. Management prescriptions and priorities for development would be defined for the planning area.

Response: The trona/oil and gas issue is being resolved outside the scope of the Green River RMP. Currently, a task force made up of industry and BLM representatives is pursuing methods of managing both resources simultaneously.

5. Designation or nondesignation of ACECs or other special management areas, and the related management of those areas should be defined. The ACEC criteria used to determine relevance and importance and the rationale for recommending an area for ACEC designation and the related management for that area should also be included in the document. WSAs not designated by Congress as wilderness should be designated as ACECs. Management of South Pass (Altamont Pipeline), Red Desert, and closing the corridor through the Red Creek ACEC were also specific concerns.

Response: The ACEC relevance and importance criteria are being included in the Final EIS. Previously, this information was available in the Management Situation Analysis on file in the Green River Resource Area office. Management prescriptions are based upon the resources identified in the areas and upon the actions needed to meet area objectives. Since ACECs are special management areas to receive emphasis in the future, the management objectives to be achieved set the framework for specific management prescriptions in the area. Areas that did not meet the ACEC criteria were not identified for ACEC designation. Areas within WSAs that were determined to meet the ACEC relevance and importance criteria were identified in the Draft EIS. A portion of the Pine Springs expansion area that met the ACEC relevance and importance criteria overlapped portions of the Devils Playground/Twin Buttes WSA. Three existing ACECs also reside within or as part of three WSAs and have been managed under ACEC designation for over 10 years. These ACECs are Red Creek, Oregon Buttes, and the Greater Sand Dunes. Not all WSAs were determined to meet the ACEC relevance and importance criteria, nor were they considered for ACEC designation just because they were WSAs. The criteria for establishing ACECs and WSAs are not the same. Additionally, an ACEC designation is not a substitute for a wilderness suitability recommendation (BLM Manual 1613.06).

The Altamont Pipeline route through South Pass has been a part of the reasonably foreseeable development scenarios presented in the Draft EIS and included in the Final EIS. Management prescriptions for rights-of-way are also included in the management prescriptions for this area.

An alternate utility window through Red Creek is being analyzed in the Final EIS.

6. Wild and scenic rivers were the subject of many letters requesting that all eligible rivers be recommended for inclusion into the wild and scenic river system.

Response: The review of waterways consisted of considering the eligibility criteria and suitability factors on BLM-administered segments along waterways. The process is described in Appendix 4 of both the Draft EIS and Final EIS. Many of these segments, however, did not meet the suitability criteria and were thus not included. We received no comments adverse to the eligibility and suitability criteria used in identifying segments. After further review, our recommendations will stay the same and we will maintain our suitability findings on public lands adjacent to the Sweetwater River.

7. Candidate Plant Species management is a concern in that so much is unknown about these plants. Most comments supported protection of the plants. Users were concerned with requirements to conduct surveys and the timing restrictions involved.

Response: Clarification of candidate plant species management has been placed in the final document. Floristic surveys will be conducted by BLM in the future to determine the extent of habitats. Until then, operators may conduct site specific surveys at the project phase. BLM state policy is also being pursued to clarify management. Current policy is to protect the plants and there is no proven mitigation to protect the plants other than total avoidance of sites. Thus no detailed alternatives were developed and analyzed in the document to allow disruption or destruction of plants.

8. Animal Damage Control and the use of M-44s were the subject of a postcard campaign with over 100 postcards received requesting that M-44s not be utilized on public lands. Still

others did not want animal damage control activities to occur. Additional letters were received objecting to animal damage control activities, especially the use of M-44s.

Response: There is a misunderstanding of the Bureau's requirements and agreements with APHIS. The Green River RMP will not decide the ADC issue. The district-wide Animal Damage Control EA dealt with this subject and these comments were considered in the preparation and completion of that district-wide EA.

9. The effectiveness of off-road vehicle management, the concern over lack of enforcement, and the affects on geophysical activities were topics of many letters. Clarification is needed on how the off-road vehicle policy is applied to geophysical or other vehicles. The geophysical industry is concerned that if they cannot operate off-road they cannot conduct their business. They are a quasi-permitted activity receiving environmental review prior to initiation of activities and feel they should be treated appropriately. Also the operations appendix and impacts need clarification of new types of operations reducing affects from vehicle use should be discussed.

Response: Wyoming BLM state policy is being revised to clarify the intent of the use of vehicles and what activities would be allowed off-road. Generally, permitted activities are subject to site specific analysis and appropriate mitigation. Following such analysis, activities could be allowed or disallowed depending upon the impacts and objectives for managing the area. For the most part, although geophysical activities are not authorized under a permit, they are authorized subject to site specific analysis and appropriate mitigation. In most areas, use of vehicles off-road can be allowed subject to this mitigation. The document has been modified to include this clarification. However, areas where off-road vehicles are not acceptable have been identified in the document. The appendices have been updated to include improved methods of geophysical operations and more up-to-date information.

Clarification of transportation planning and management of ORV designations is being developed. Concerns on enforcement have been noted by the resource area specialists. Public outreach efforts would be conducted to inform the public of ORV prescriptions. Specialists will also be working closely with the district ranger to implement and where necessary enforce prescriptions.

10. Several letters commented on the socioeconomic analysis in the Draft EIS. Some people felt that the analysis did not recognize the importance of the minerals industry to local economies; others felt that the analysis far underestimated the local economic impact of recreation and tourism; and some felt that the economic importance of the livestock industry was overstated.

Response: Depending on which economic "model" is used to analyze impacts on public lands and quantify those impacts, conclusions can vary widely. It is impossible to say one set of numbers is "right" and all others are "wrong." Some revisions and corrections were made in the oil and gas, trona, recreation, and livestock sectors. Figures given in the text of the document are based on an economic model developed by the University of Wyoming. Selected economic data (tables) provided by Sweetwater County are presented in the updated Appendix 10 in the Final EIS.

Not all the letters received were published. Many letters expressed the same opinions; one letter and the responses represent those. Responses to additional information in otherwise identical letters are included.

TABLE 5-1

GREEN RIVER RMP LIST OF PREPARERS

NAME	JOB TITLE	RMP RESPONSIBILITY
Green River Office		
Bill LeBarron	Area Manager	Decision Maker
Pat Wendt	Assistant Area Manager	Decision Maker
Don Judice	Supervisory Petroleum Engineer	Assistant Team Leader, GIS Coordinator, Technical Coordinator
Rick Amidon	Wildlife Biologist	Wildlife and Water Maps; Raptors, Big Game
Jim Dunder	Wildlife Biologist	Wildlife
Sally Haverly	Realty Specialist	Lands, Access, Transportation
Jim Perkins	Supervisory Range Conservationist	Livestock
Randy Porter	Geologist	Solid Minerals, Paleontology, Wyoming Registered Professional Geologist-1900
Kellie Roadifer	Range Conservationist	Vegetation
Thor Stephenson	Range Conservationist	Wild Horses
Russ Tanner	Archeologist	Cultural, Historic, Native American concerns

TABLE 5-1 (Continued)
GREEN RIVER RMP LIST OF PREPARERS

NAME	JOB TITLE	RMP RESPONSIBILITY
Andy Tenney	Outdoor Recreation Planner	Off-Road Vehicles, Recreation, Visual Resource Management, Wilderness, Wild and Scenic Rivers
Judy Mueller	Staff Assistant	Typing Support
Dorothy Savage	Staff Assistant	Typing Support
Betty Nickerson	Staff Assistant	Support
Rock Springs District Office		
Renée Dana	Team Leader	Coordination, NEPA Responsibility
Barbara Amidon	Botanist	Sensitive Plants
Mike Brown	Outdoor Recreation Planner	Wild and Scenic Rivers
Dennis Doncaster	Hydrologist	Water Quality
John Henderson	Fishery Biologist	Fish, Riparian Areas, Wetlands
John MacDonald	Soil Scientist	Soils
Bob Raper	Fire Management Officer	Fire Management
Dennis Stenger	Supervisory Geologist	Solid Minerals
Dean P. Stilwell	Geologist	Geology, Fluid Minerals, Wyoming Registered Professional Geologist-1070
Wayne Sutherland	Environmental Scientist, Geologist	Minerals
Allen White	Environmental Scientist (Hazmat)	Hazardous Materials
Angelina Pryich	Writer-Editor	Editing
Teresa Deakins	Environmental Specialist	Support
Diana Matozevich	Staff Assistant	Typing Support
Tracy Thompson	Staff Assistant	Typing Support
Rita Giorgis	Support Services Supervisor	Support
Kemmerer Office		
Roland Robbins	Forester	Forestry
Wyoming State Office		
Joe Patti	Natural Resource Specialist; Field Planning Coordinator	Planning process guidance; Technical review and training; Field/WSO Coordination
John A. Pederson	Economist	Mineral Economics, Revenue and Taxes
Carl Santmyer	Economist	Socioeconomics
Mike Sestak	Physical Scientist	Air Quality
Jerry Carter	Supervisory Printing Specialist	Printing

TABLE 5-1 (Continued)

GREEN RIVER RMP LIST OF PREPARERS

NAME	JOB TITLE	RMP RESPONSIBILITY
Sheri Morris	Printing Specialist	Composition/Phototypesetting
Tamera Hammack	Printing Technician	Phototypesetting
Tina Roberts	Legal Clerk (Office Assistant)	Typing Support
Patrick Madigan	Supervisory Cartographer	Cartography, Illustrations, GIS Specialist
Roger Lawrence	Visual Information Specialist	Illustrations
Doug Morrow	Photolithographer	Photo Reproduction
Terri Mitchell	Supervisory Cartographic Technician	Manual Cartography
Larry Neasloney	Cartographic Technician	GIS Assistance
Robert Lew	Cartographic Technician	Manual Cartography
Marlene Walters	Cartographic Technician	Digitizing
Esther Simons	Supervisory Cartographic Technician	Manual Cartography, GIS Assistance
Mary Bonogofsky	Cartographic Technician	Digitizing
Glenn Ellenson	Cartographic Technician	Manual Cartography
Olen Johnson	Cartographic Technician	Digitizing
Richard Puls	Cartographic Technician	Digitizing
Gretchen Meyer	Natural Resource Specialist	GIS Assistance, Digital Elevation Models

TABLE 5-2

COMMENT LETTER INDEX

(numbered as received)

LETTER	NAME
1	Federal Highway Administration
2	National Park Service
3	National Park Service
4	U.S. Army Corps of Engineers
5	Department of the Air Force
6	Bureau of Mines
7	U.S. Forest Service
8	Federal Energy Regulatory Commission
9	Department of Health and Human Services
10	U.S. EPA, Region VIII
11	U.S. Fish and Wildlife Service
12	State of Wyoming, Governor, Mike Sullivan
13	State of Wyoming, Department of Environmental Quality
14	State of Wyoming, Department of Commerce
15	State of Wyoming, Department of Commerce, Division of Parks

TABLE 5-2

COMMENT LETTER INDEX

(numbered as received)

LETTER	NAME
16	State of Wyoming, Game & Fish Department
17	State of Wyoming, Geological Survey
18	State of Wyoming, Oil & Gas Conservation Commission
19	State of Wyoming, State Land & Farm Loan Office
20	State of Wyoming, Public Service Commission
21	State of Wyoming, State of Engineer's Office
22	Ray Sarcletti, State Representative
23	Eli Bebout, State Representative
24	Linda M. Taliaferro, Sweetwater County Commission
25	Jim Carroll, Mayor, City of Kemmerer
26	Dennis J. Ottley, Mayor, City of Evanston
27	Rocky Mountain Oil & Gas Association
28	Petroleum Association of Wyoming
29	IPAMS
30	ENRON Oil & Gas Company
31	EXXON Company, U.S.A.
32	Heitzman Drill Services
33	Union Pacific Resources
34	Texaco Exploration and Production, Inc.
35	Amoco Production Company
36	Marathon Oil Company
37	True
38	True
39	Washington Energy Resources
40	Washington Energy Resources
41	ARCO Oil & Gas Company
42	WEXPRO Company
43	Mobil Exploration & Producing U.S. Inc.
44	Terry W. Donze, Petroleum Exploration
45	Western Geophysical
46	Walter E. Johnson
47	Powers Elevation Co., Inc.
48	Gene R. George, Geologist
49	Jerry L. Devin
50	Greg L. Day
51	Hyland Enterprises, Inc.
52	KN Production Company
53	Wyoming Heritage Society
54	Wyoming Heritage Society
55	Sweetwater Economic Development Association
56	Office of Planning and Development, Lincoln County
57	Uinta County Economic Development Commission
58	Rock Springs Chamber of Commerce
59	John Hay, Rock Springs Grazing Association
60	Wyoming Farm Bureau Federation
61	Albany County School District One
62	Barlow & Haun, Inc.
63	Barlow & Haun, Inc.
64	AXIA Management

TABLE 5-2

COMMENT LETTER INDEX

(numbered as received)

LETTER	NAME
65	First National Bank
66	Louisiana-Pacific Corporation
67	John Fraher
68	Elkhorn Construction, Inc.
69	Pacific Power
70	Stockgrowers State Bank
71	R.K. O'Connell
72	Black Hills Bentonite
73	Douglas F. Miller
74	Alpha Exploration, Inc.
75	Susan Guio
76	The Bank of Laramie
77	Black Hills Power and Light Company
78	MDU Resources Group, Inc.
79	Sun Ranch
80	Palm Livestock Company
81	Royal Alliance
82	W.M. Taliaferro
83	Harold Josendal
84	Northwest Pipeline Corporation
85	Questar Pipeline Company
86	Pacific Power
87	Altamont Gas Transmission Company
88	Bridger Coal Company
89	FMC Wyoming Corporation
90	General Chemical
91	Rhône-Poulenc of Wyoming, L.P.
92	Solvay Minerals
93	Wyoming Mining Association
94	Friends of Wild Wyoming Deserts
95	Sierra Club, Wyoming Chapter
96	Sierra Club, Rocky Mountain Chapter
97	Greater Yellowstone Coalition
98	Friends of the Bow
99	Marvin J. Friedenberg
100	Joan Bennet
101	Sandra L. Garnett
102	Mary Lynn Callahan & Bob Ciulla
103	Helen Brown
104	Chris Kennedy
105	Elizabeth Dominick
106	Martha Thompson
107	Karen Hitchens
108	Hope Meller
109	Don & Gwen Wadsworth
110	Tom Stefanik
111	Hannah Hinchman
112	Myrna Siegel
113	M. Braun, C. Braun, M. Preston

TABLE 5-2

COMMENT LETTER INDEX

(numbered as received)

LETTER	NAME
114	Diana Stratton
115	Alice L. Sharp
116	Neil & Jennifer Miller
117	Michael Lee Jones
118	Jim Morehouse
119	Lisa Foster
120	Dan Klein
121	Lynda Fanning
122	No Name
123	Virginia Upson
124	Martin & Millie Steinwand
125	Forrest Leland
126	Norman A. Bishop
127	Josephine D. Larson
128	Michael Evans
129	Barbara Parsons
130	Robert S. Young, Jr.
131	Leonard Carlman
132	Mal & Maggie Miller
133	Ken Driese
134	Ted Kerasote
135	Gregory S. Eaglin
136	Frank & Lois Layton
137	Kirk Cunningham
138	Donald Thompson
139	Randy Webb
140	Neil & Jennifer Miller
141	Robert L. Nantkes
142	Sigrid Mayer
143	Jason A. & Linda E. Lillegraven
144	Joyce Jansa-Corcoran
145	Loring Woodman
146	Chelsea Kesselheim
147	Judy Little
148	Larry Jansen
149	Robert Hoskins
150	Sue Miller
151	Sharon Dooley
152	Carl M. Detwyler
153	Harriet McGee
154	Beverly Boynton
155	Dot Vali
156	Carlton Belz
157	Henry Phibbs II & Leslie P. Petersen
158	Daniel J. Dundon
159	John R. Swanson
160	Ken Meade
161	Connie Wilbert
162	Michael Cockrell

TABLE 5-2

COMMENT LETTER INDEX

(numbered as received)

LETTER	NAME
163	Scott Thomas
164	Scott Bohle
165	Bonnie Hofbauer
166	Wendall Funk
167	Wilford Schreiber
168	Luna Leopold
169	Trudy Dittmar
170	John M. Good
171	Sweetwater County Wildlife Association
172	Wyoming Wildlife Federation
173	National Wildlife Federation
174	Stonefly Society
175	Norman Gillespie, Wyoming Big Game Resource Association
176	Tom Christiansen
177	Medicine Wheel Alliance
178	WWCC Archaeological Services
179	Frontier Archaeology
180	Tom Bell
181	University of Wyoming, Department of Geology & Geophysics
182	University of Wyoming, Department of Geology & Geophysics
183	The Nature Conservancy
184	The Nature Conservancy
185	Dick Randall, Humane Society of the United States
186	Charmaine Refsdal
187	Dorothy Savage
188	Wyoming Outdoor Council
189	Sweetwater County Farm Bureau
190	Wyoming Farm Bureau Federation
191	Wyoming State Grazing Board
192	Garie Henry
193	Big Sandy Conservation District
194	Leonard Hay
195	Dave Hohl
196	Randall R. Taylor
197	William J. Thoman
198	David W. Freeman
199	Chris Plant
200	Clem L. Rawlins
201	Ronald K. Smith
202	Ted Lapis
203	Craig Kesselheim
204	Rob & Martha Hellyer
205	Steve Wiles
206	Doug Samuelson
207	Douglas Woody
208	Lynn R. Jackman
209	Robert C. LeFaivre

TABLE 5-3

PUBLIC OUTREACH

DATE	WHERE	APPROXIMATE NUMBER ATTENDING
Open Houses		
1-19-93	LaBarge	2
1-20-93	Lyman	7
1-23-93	Rock Springs (White Mountain Mall)	30
1-25-93	Lander	14
1-26-93	Farson	4
11-22-94	Lander	10
11-30-94	Rock Springs	40
Other		
2-91	Dear Friends Letter	
12-17-92	Rock Springs District Office	15
1-6-93	Sweetwater County Legislators	1
1-8-93	District Advisory Council	9
1-13-93	Trout Unlimited	9
1-19-93	Sweetwater County	10
1-28-93	BLM - Cheyenne	20
1-29-93	State of Wyoming - Cheyenne	5
2-16-93	RMOGA, PAW	14
2-16-93	Public Hearing	59
2-22-93	Geophysical and O&G Operators - Denver	16
2-25-93	Enron	4
2-25-93	Class at WWCC	12
3-2-93	National Wildlife Federation	2
3-3-93	District Advisory Council	9
4-14-93	Congressional Representatives	3
5-10-93	Ashley National Forest	4
5-13-93	Kiwanis	15
5-21-93	Wyoming Game and Fish Department	5
5-26-93	Wyoming Outdoor Council, Sierra Club	6
5-93	Chamber of Commerce	
8-2-93	Union Pacific Resources	3
8-23-93	Rock Springs Grazing Association	6
9-8-93	Governor Sullivan	10
9-15-93	Barlow and Haun	8
3-15-94	Sweetwater County	10
3-21-94	Sweetwater County	10
10-94	Dear Friends Letter	
3-1-95	Kiwanis	14

TABLE 5-4
KEY COORDINATION ACTIONS

AGENCY	COORDINATION/RESPONSIBILITY
FEDERAL AGENCY	
Department of the Interior	
Bureau of Mines	Approval for recovery of federally owned helium from natural gas.
Bureau of Reclamation	Coordinate mineral leasing and other activities that affect lands that are administered by the BOR. Review the RMP for consistency with BOR planning.
Fish and Wildlife Service	Review actions affecting threatened or endangered species of fish, wildlife, or plants.
Geological Survey	Review of RMP for consistency with USGS planning.
Minerals Management Service	Review of RMP for consistency with MMS planning.
Department of Agriculture	
Forest Service	Coordinate mineral leasing and other activities that affect lands administered by USFS. Review the RMP for consistency with USFS planning. Review of RMP for consistency with the management actions. The proposed actions would also be discussed with the Wyoming State Forestry Division and other agencies involved in wild land fire management. Coordinate and cooperate with USFS, DEQ, and EPA on monitoring and collecting of air quality data.
Environmental Protection Agency	Coordinate and cooperate with USFS, DEQ, and EPA on monitoring and collecting of air quality data.
STATE AGENCY	BLM would cooperate with the State of Wyoming on the 208 plan and coordinate the development of water quality plans consistent with BLM programs and RMP recommendations. BLM would coordinate with Wyoming DEQ and EPA on air quality standards and regulations that could affect BLM-managed activities. BLM would coordinate with Wyoming DEQ and EPA on the development of visibility standards and guidelines. BLM would coordinate and cooperate with USFS, DEQ, and EPA on monitoring and collecting of air quality data. Vegetation manipulation projects would involve coordination with affected livestock operators and the Wyoming Game and Fish Department.
COUNTY AGENCY	
Fremont, Lincoln, Sublette, Sweetwater, Uinta	Review RMP for consistency. Zoning. Access permits.

GLOSSARY

ACTIVE DUNE. A hill or accumulation of sand shaped by wind. A dune is active when constantly changing form under wind currents. Generally, an active dune is bare of vegetation.

ACTIVITY FUELS. Fuels resulting from, or altered by, forestry practices such as timber harvest or thinning, as opposed to naturally created fuels.

ACTIVE PREFERENCE. Or grazing preference is defined in the grazing regulations as "the total number of animal unit months of livestock grazing on public lands apportioned and attached to base property owned or controlled by a permittee or lessee." Grazing preference is displayed on a permit in three columns: Total, Suspended, and Active. The active level is the only level of AUMs that can be used by a permittee on the permit in an allotment. Suspended AUMs are those AUMs that are held in suspension mainly because of production surveys that stated that these AUMs were not present. They cannot be used by the permittee. Total preference is active plus suspended.

AIR POLLUTION. The general term alluding to the undesirable addition of substances (gases, liquids, or solid particles) to the atmosphere that are foreign to the natural atmosphere or are present in quantities exceeding natural concentrations.

AIR QUALITY CONTROL REGION. A primary air quality administrative area, designated in accordance with the provisions of the 1970 Clean Air Act, on the basis of geographical and meteorological considerations.

ALKALINE-SALINE SOIL. Soil with a pH greater than 7.0 throughout most or all of it occupied by plant roots; and enough soluble salts to impair plant productivity.

ALKALINE SOILS. Any soil that has a pH value of greater than 7.0. However, common usage when referring to problem soils (i.e., for revegetation) is usually for soils with a pH of 8.5 or higher, often accompanied by an exchangeable sodium content of 15 percent or higher.

ALLOWABLE BURNED AREA. Maximum average area burned over a specified period of year that is considered an acceptable loss for a specified area under organized fire suppression.

ALLOWABLE CUT. The amount of timber considered available for cutting during a specified period (year, decade, etc.).

ALLUVIUM. Unconsolidated fragments from rocks or minerals, moved from their place of origin and deposited by running water; including gravel, sand, silt, clay, and mixtures of these materials.

ANIMAL UNIT MONTH (AUM). The amount of forage to sustain one mature cow or the equivalent, based on an average daily forage consumption of 26 pounds of dry matter per day. The equivalent animal units for other ungulate species, based on a weight conversion (3 percent body weight per day), are: 10.5 for antelope; 7.6, deer; 2.1, elk; 1.2, moose; 0.9, wild horses; and 5.2, sheep.

ANTICLINAL. Inclined toward each other; an anticline is a unit of folded strata that is convex upward. In simple anticlines the beds are oppositely inclined. In more complex types the limbs of strata may dip in the same direction.

APPROPRIATE MANAGEMENT LEVEL (AML). The optimum number of wild horses that provides a thriving natural ecological balance on the public range.

AVAILABLE FUEL. That portion of the total fuel that would actually be consumed under specified burning conditions. Unless otherwise stated, this term is assumed to be just the fuel consumed in the fire front and is used in this context in the models incorporated in NFDRS and BEHAVE. Although generally ignored, the fuel consumed behind the fire front by intermittent flaming and glowing combustion is also a part of available fuel and can in some instances comprise a significant portion of the total.

AVERAGE WORST YEAR. Third worst fire season in the last ten, as determined by the sum of daily danger or burning indices during the regularly financed fire season; use the same number of days each year to determine these totals.

AVOIDANCE AREA. Areas on public lands where future rights-of-way may be granted only when no feasible alternative route or designated right-of-way corridor is available.

BACKFIRE. (1) as used in fire suppression activities, see SUPPRESSION FIRING. (2) as used in prescribed burning activities (to designate the fire movement in relation to wind or slope), see BACKING FIRE.

BADLAND. Surface features characterized by sharp erosional scar sculpture of weak rocks, forming steep, furrowed, and fantastically shaped hills, labyrinth-like drainage patterns, and normally dry watercourses.

BASE AREA (NFDRS). An area representative of the major fire problems on a protection unit. Base fuel model and slope class are chosen from the base area.

BASE FUEL MODEL (NFDRS). A representation of the vegetative cover and fuel in a base area; used in the calculation of fire danger rating.

BIODIVERSITY. See BIOLOGICAL DIVERSITY.

BIOLOGICAL DIVERSITY. Refers to the variety of life and its processes and includes the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.

BIOLOGICAL UNIT/BIOREGION. A territory defined by a combination of biological, social, and geographic criteria, rather than geopolitical considerations, generally, a system of related, interconnected ecosystems. In most cases, formerly called a "herd unit."

BOARD FOOT. A measurement of the volume of a tree which is based on a block of wood one foot on each side and one inch thick.

BOARD OF REVIEW. A board or committee selected to review results of fire suppression action on a specific unit or the specific action taken on a specific fire in order to identify reasons for both good and poor action and to recommend or prescribe ways and means of doing a more effective and efficient job.

BROADCAST BURNING. Allowing a prescribed fire to burn over a designated area within well-defined boundaries to achieve some land management objectives.

BRUSH FIRE. A fire burning in vegetation characterized by shrubs or small trees (cf. forest fire, range fire, wildfire).

BRUSH MANAGEMENT. Manipulation of stands of brush by manual, mechanical, chemical, or biological means or by prescribed burning for the purpose of achieving land management objectives.

GLOSSARY

BURNING INDEX (BI). A relative number related to the contribution that fire behavior makes to the amount of effort needed to contain a fire in a specified fuel type. Doubling the BI indicates twice the effort will be required to contain a fire in that fuel type as was previously required providing all other parameters are held constant.

BURNING PERIOD. That part of each 24-hour period when fires spread most rapidly, typically from 1,000 hours to sundown.

CAMPING. Overnight occupancy on public land.

CANDIDATE PLANT SPECIES CATEGORIES (definition of).

Category 1. Plants for which the USFWS currently has on file substantial information on biological vulnerability and threat(s) to support the appropriateness of proposing to list them as endangered or threatened species. Presently, all data are being gathered concerning precise habitat needs and, for some of the plants, concerning the precise boundaries for critical habitat designations. Development and publication of proposed rules on these plants are anticipated, but because of the large number of such plants, could take some years.

Category 2. Plants for which information now in possession of the USFWS indicates that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the immediate preparation of rules. Further biological research and field study usually will be necessary to ascertain the status of the plants in Category 2, and some of the plants are of uncertain taxonomic validity. It is likely that some of these will not warrant listing, while others will be found to be in greater danger of extinction than some plants in Category 1.

Category 3. Plants that have proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat. Should further research or changes in land use indicate significant decline in any of these plants, they may be reevaluated for possible inclusion in Category 1 or 2.

CANDIDATE SPECIES. A plant or animal species whose numbers are declining so rapidly that official listing as threatened or endangered pursuant to Section 4 of the Endangered Species Act may become necessary as a conservation measure. Declines may be due to one or more factors, including: destruction, modification, or curtailment of the species' habitat or range; overutilization for commercial, sporting, scientific, or educational purposes; disease or predation; the inadequacy of existing regulatory mechanisms; or other factors.

CASUAL USE. Activities that involve practices which do not ordinarily lead to any appreciable disturbance or damage to lands, resources, and improvements. For example, activities which do not involve use of heavy equipment or explosives and which do not involve vehicular movement except over established roads and trails are casual use.

CAUSES OF FIRES. For statistical purposes, fires are grouped into broad fire cause classes: lightning, campfire, smoking, debris burning, incendiary, equipment use, railroad, children, and miscellaneous.

CHAIN. Unit of measure in land survey, equal to 66 feet (80 chains equal 1 mile). Commonly used to report fire perimeters and other fireline distances, this unit is popular in fire management because of its convenience in calculating acreage (e.g., 10 square chains equal one acre).

CHECKERBOARD LAND PATTERN. Alternating sections of federally owned lands with private or State lands on either side of the Union Pacific railroad in southwestern Wyoming. This pattern of land ownership looks like a checkerboard on maps using different colors to show land status.

CHERRYSTEMMED. A WSA boundary which is drawn around a dead-end road or other linear feature to exclude it from the WSA.

CLINOPTILOLITE. A zeolite mineral occurring in the Bridger Formation; a hydrous alumino-silicate formed by the alteration of volcanic tufts and glasses. Zeolites are used as absorbents in drying, in air separation, in water treatment, in the paper industry, as a dietary supplement for livestock, and as a soil conditioner.

CONDITIONS OF APPROVAL (COAs). Conditions or provisions (requirements) under which a site-specific surface disturbing or human presence activity (APD, sundry notice, ROW, etc.) is approved.

CONSUMPTIVE USE. Recreation activities which consume natural resources. Hunting and fishing are regarded as consumptive recreation because wildlife are consumed. Rockhounding is consumptive because nonrenewable resources are removed.

CONTAIN A FIRE. Take fire suppression action as needed which can reasonably be expected to keep the fire within established boundaries under prevailing conditions.

CONTAINMENT. Completion of a control line around a fire and any associated spot fires which can reasonably be expected to stop the fire's spread.

CONTROL A FIRE. Complete a control line around a fire, any spot fire therefrom, and any interior island to be saved, burn out any unburned area adjacent to the fire side of the control lines, and cool down all hot spots that are immediate threats to the control line, so that the line can be expected to hold under foreseeable conditions. Implies more thorough suppression than containing a fire.

CONTROL LINE. Comprehensive term for all constructed or natural barriers and treated fire edges used to control a fire.

CONTROL TIME. Elapsed time from the first work on a fire until holding the control line is assured (sometimes still measured only from the time of containing a fire).

CONTROLLED SURFACE USE (CSU). With a controlled surface use stipulation, use and occupancy is allowed (unless restricted by another stipulation), but identified resource values require special operational constraints that may modify the lease rights. Controlled Surface Use is used for operating guidance, not as a substitute for the NSO or timing limitation stipulations.

CRUCIAL RANGE. Crucial range can describe any particular seasonal range or habitat component (often winter or winter/yearlong range in Wyoming) but describes that component which has been documented as the determining factor in a population's ability to maintain itself at a certain level (theoretically at or above the population objective) over the long term. Example: The total crucial winter range for an elk herd unit should be available, relatively intact, and allow a population at objective to survive the winter in adequate body condition and to maintain average reproductive rates 8 out of 10 years.

GLOSSARY

CULTURAL RESOURCE INVENTORY LEVELS. A three-tiered process for discovering, recording, and evaluating cultural resources.

Class I - a review of existing literature and oral informant data together with an analysis of a specific geographic region (eg. an area of potential effect, drainage basin, resource area, etc.).

Class II - A sampling survey usually aimed at developing and testing a predictive model of cultural resource distribution.

Class III - an on-the-ground survey to discover, record, and evaluate cultural resources within a specific geographic area (eg. usually an area of potential effect for a proposed undertakings).

CULTURAL RESOURCE MANAGEMENT PLAN. A site specific activity plan regarding management of cultural resources, or a plan for managing a particular class of cultural resource.

DAILY ACTIVITY LEVEL (NFDRS). In fire danger rating, a subjective estimate of the degree of activity of a potential human-caused fire source relative to that which is normally experienced. Five activity levels are defined: none, low, normal, high, and extreme.

DEAD FUELS. Fuels with no living tissue in which moisture content is governed almost entirely by atmospheric moisture (relative humidity and precipitation), dry-bulb temperature, and solar radiation.

DESIRED FUTURE CONDITION. A future land or resource condition that achieves a set of compatible multi-resource goals and objectives.

DESIRED PLANT COMMUNITY. The plant community which provides the vegetation attributes required for meeting or exceeding RMP vegetation objectives. The desired plant community must be within an ecological site's capability to produce these attributes through natural succession, management action, or both (BLM Wyoming Instruction Memorandum 91-290, 5/29/91).

DISRUPTING ACTIVITIES. Disruptive pertains primarily to human presence and related activities that may cause displacement of or excessive stress to wildlife during critical life-cycle periods.

DISTURBANCE FACTOR FOR WILDLIFE. Defined as human activities, including traffic and motorized activities often associated with surface disturbance activities that affect wildlife species, particularly in crucial ranges.

DROUGHT. A period of relatively long duration with substantially below-normal precipitation, usually occurring over a large area.

ECOLOGICAL CONDITION. This term is misused in the RMP. See ECOLOGICAL STATUS.

ECOLOGICAL STATUS. Defined in the Bureau's monitoring manuals as "the present state of vegetation of a range site in relation to the potential natural community for the site. Ecological status is use independent. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the potential natural community. The four ecological status classes correspond to 0-25, 26-50, 51-75, or 77-100 percent similarity to the potential natural community and are called early seral, mid seral, late seral, and potential natural community, respectively, (this replaces range condition)."

ENERGY RELEASE COMPONENT (ERC). The computed total hear released per unit area (BTU's per square foot) within the fire front at the head of a moving fire.

EOLIAN ICE-CELLS. Perennial ice formed from snowfall and insulated from summer heat by a cover of windblown sands. This ice feeds small ponds within the dunes.

ERODIBILITY. The tendency of a soil to erode as influenced by texture under specified salts, structure, or slope.

EXCEPTION. A case-by-case exemption from a lease stipulation. The stipulation continues to apply to all other sites within the leasehold to which the restrictive criteria apply.

EXCLUSION AREA. Areas where future rights-of-way may be granted only when mandated by law.

EXISTING ROADS AND VEHICLE ROUTES. Defined as routes existing prior to the date of designation, constructed or created by the frequent passage of motor vehicles, and receive regular and continuous use. Additional vehicle routes may be authorized as need dictates.

EXTENSIVE RECREATION MANAGEMENT AREAS. BLM administrative units where recreation management is only one of several management objectives and where limited commitment of resources is required to provide extensive and unstructured type of recreation activities. They may contain recreation sites. These areas consist of the remainder of land areas not included in Special Recreation Management Areas within a resource area.

EXTIRPATION. Extermination.

FINE FUELS. Fast-drying dead fuels, generally characterized by a comparatively high surface are-to-volume ratio, which are less than 1/4 inch in diameter and have a timelag of one hour or less. These fuels (grass, leaves, needles, etc.) ignite readily and are consumed rapidly by fire when dry.

FIRE BENEFITS. Fire effects with positive monetary, social, or emotional value or that contribute, through changes in the resource base, to the attainment of organizational goals.

FIRE CLIMAX. Plant community maintained by periodic fires.

FIRE DAMAGE. Detrimental fire effects expressed in monetary or other units, including the unfavorable effects of fire-induced changes in the resource base on the attainment of organizational goals.

FIRE DANGER. Sum of constant danger and variable danger factors affecting the inception, spread, and resistance to control, and subsequent fire damage; often expressed as an index.

FIRE DANGER RATING. Fire management system that integrates the effects of selected fire danger factors into one or more qualitative or numerical indices of current fire protection needs.

FIRE EFFECTS. Physical, biological, and ecological impacts of fire on the environment.

FIRE ENVIRONMENT. Surrounding conditions, influences, and modifying forces of topography, fuel, and air mass that control fire behavior.

FIRE FUEL MODELS. Four National Fire Danger Rating System fuel models (G, H, L, and T, respectively) (Deeming 1978) adequately describe the make-up and potential fire danger of the fuels involved in the planning area.

Fuel Model T fuels are characterized by the sagebrush-grass types of the Great Basin and the Intermountain West. The shrubs burn easily and are not dense enough to shade out grass and other herbaceous plants. The shrubs occupy at least one-third of the site or the A or L fuel models should be used. Fuel Model T might be used for immature scrub oak and desert shrub associations in the west, and the scrub oak-wire grass type in the southeast. This fuel model is found on 4,880,747 acres of the planning area.

Fuel Model L is meant to represent western grasslands vegetated by perennial grasses. The principal species are coarser and the loadings heavier than those in Model A fuels. Otherwise the situations are very similar; shrubs and trees occupy less than one-third of the area. The quantity of fuel in these areas is more stable from year to year. This fuel model may be substituted for Fuel Model J in the early summer and late fall due to the availability of fine fuels.

Fuel Model H is represented by the short-needled conifers (white pines, spruces, larches, and firs). In contrast to Model G fuels, Fuel Model H describes a healthy stand with sparse undergrowth and a thin layer of ground fuels. Fires in H fuels are typically slow spreading and dangerous only in scattered areas where the downed woody material is concentrated. This fuel model is found on 116,816 acres on the planning area. Juniper may also be represented in extreme fire danger situations.

Fuel Model G is used for dense conifer stands where there is a heavy accumulation of litter and downed woody material. Such stands are typically overmature and may also be suffering insect, disease, wind, or ice damage; natural events that create a very heavy buildup of dead material on the forest floor. The duff and litter are deep and much of the woody material is more than three inches in diameter. The undergrowth is variable, but shrubs are usually restricted to openings. Types meant to be represented by Fuel Model G are hemlock-sitka spruce, coast Douglas-fir, and windthrown or bug-killed stands of lodgepole pine and spruce. This fuel model is located in small isolated areas generally associated with wet, low fire danger areas. Only during drought conditions do these areas pose a threat.

FIRE LOAD. Number and size of fires historically experienced on a specified unit over a specified period (usually one day) at a specified index of fire danger.

FIRE MANAGEMENT OBJECTIVE. Planned, measurable result desired from fire protection and use based on land management goals and objectives.

FIRE MANAGEMENT PLAN. Statement, for a specific area, of fire policy, objective, and prescribed action; may include maps, charts, tables, and statistical data.

FIRE PLANNING. Systematic technological and administrative management process of designing organization, facilities, and procedure to protect wildland from fire.

FIRE SEASON. Period(s) of the year during which fires are likely to occur, spread, and damage wildlife values sufficient to warrant organized fire suppression.

FIRE SUPPRESSION. All work and activities associated with fire-extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

FIRE WEATHER. Weather conditions which influence fire ignition, behavior, and suppression.

FLUVIATILE. Produced by river action; belonging to a river.

FOREST FIRE. Variously defined for legal purposes (e.g., the State of California Public Resources Code: an uncontrolled fire on lands covered wholly or in part by timber, brush, grass, grain, or other flammable vegetation). Types of fires are ground, surface and crown (cf. brush fire, grass fire, range fire, wildfire).

FOREST RESOURCE MANAGEMENT CATEGORIES.

1. **Lands available for intensive management of forest products.** Areas where forest management is the primary use and where other resource uses or values occur but are not emphasized.
2. **Lands available for restricted management of forest products.** Areas where multiple use or other resource values are emphasized but timber harvest occur.
3. **Lands where the forest management is for the enhancement of other uses.** Areas where forest management activities are specifically for the benefit of other identified resource uses or values.
4. **Forest lands not available for management of forest products.** Areas where no forest management is planned.

FUEL LOADING. Ovendry weight of fuel per unit area (usually expressed in tons/acre). Loading may be referenced by fuel size or timelag categories.

FUEL MODEL. Act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire, in support of land management objectives.

FUEL TREATMENT. Any manipulation or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control (e.g., lopping, chipping, crushing, piling, and burning).

FULL-TIME EQUIVALENT (FTE). A measurement of employment that is not equal to jobs or persons; rather, it is based on hours worked (e.g., one person full time or 2 people half time both equal 1 FTE).

FUNCTIONAL - AT RISK. Riparian-wetland areas that are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation (Prichard, et al. 1993).

GREEN RIVER AIRSHED. Defined as the air over the Green River Basin. Its contents are moved by prevailing winds. Some particulates in this airshed have been documented to be from as far away as the Mexican border.

GROWING SEASON. In temperate climates, that portion of the year when temperature and moisture are usually most favorable for plant growth.

GUZZLER. A water development for wildlife.

HAZARDOUS MATERIAL. A comprehensive term that has been adopted by BLM to include a wide range of hazardous/toxic substances and hazardous wastes that require special management.

HAZARDOUS WASTE. A waste that can: a) cause injury or death or b) damage or pollute the environment. Excluded from being hazardous wastes (by CERCLA, 40 CFR 261.3, 49 CFR 171.8, 49 CFR 172.101, 20 CFR 1910.12(a)(3) are:

a) household wastes

b) solid wastes generated by agriculture which are returned to the soil as fertilizers,

c) mining overburden returned to the mine site,

d) fly ash, bottom ash waste, slag waste, and flue gas emission control waste,

e) drilling fluids, produced waters, and other wastes associated with exploration, development, or production of crude oil, natural gas, or geothermal energy,

f) solid waste from the extraction, beneficiation, and processing of ores and minerals (including coal, phosphate rock, and overburden from uranium mining,

g) petroleum-contaminated media and debris from underground storage tanks that are subject to corrective action under 40 CFR 280,

h) injected groundwater in free phase hydrocarbon recovery projects, and

i) otherwise hazardous wastes that have not yet exited their product or storage tank, vehicle or vessel, or manufacturing process unit.

HEALTHY AND PRODUCTIVE CONDITION. See PROPER FUNCTIONING CONDITION.

HIGH VALUE WILDLIFE HABITATS. Those areas which support greater biodiversity, unique or special status plant or animal species, or greater abundance of a species. Examples of these habitats are: riparian or wetland areas, heavily occupied canyons or cliffs, or crucial big game winter or parturition areas.

HISTORIC LANDSCAPE. A geographic area, including both historic and natural features, associated with an event, person, activity, or design style that is significant in American history.

HUMAN-CAUSED FIRE. Any fire caused directly or indirectly by person(s).

HUMAN-PRESENCE DISTURBANCE (OR DISRUPTIVE) ACTIVITIES. Used in the context of the physical presence, sounds, and movements of humans and their activities (on, below, or above the land surface), whether on foot, or beast of burden, or using mechanized or motorized vehicles or equipment.

HUNTER-DAY. The presence of one person in an area for the purpose of engaging in a hunting activity during all or part of a calendar day.

HYDRIC SOIL. A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

HYDROPHOPIC SOILS. Water-repellant soils.

HYDROPHYTE. Any plant that grows in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content; plants typically found in wetlands and other aquatic habitats.

HYDROPHYTIC VEGETATION. Plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.

INCENDIARY FIRE. Wildlife willfully ignited by anyone to burn, or spread to, vegetation or property not owned or controlled by that person and without consent of the owner or his/her agent.

INTERMITTENT STREAM. A stream or part of a stream that flows only in direct response to precipitation. It receives little or no water from springs and is dry for most of the year.

KEETCH-BYRAM DROUGHT INDEX. Commonly-used drought index developed specifically for fire management applications, with a numerical range from 0 (no moisture deficiency) to 800 (maximum drought).

LACUSTRINE. Produced by or formed in a lake or lakes.

LEASABLE MINERALS. Minerals subject to lease by the Federal Government; include oil and gas, coal, phosphate, sodium, potash, and oil shale, as well as geothermal resources.

LEASE NOTICE. These notices (not to be confused with Notices to Lessees) are attached to leases and provide detailed information concerning limitations that already exist in law, lease terms, regulations, or operational orders. A Lease Notice also addresses special items the lessee should consider when planning operations, but does not impose new or additional restrictions.

LIFE OF MINE. Time period it takes to exhaust the recoverable coal reserves within a mine or permit area.

LIGHTNING FIRE. Wildfire caused directly or indirectly by lightning.

LITHIC SCATTER SITE. A class of cultural resource that consists of an array of chipped stone artifacts without other kinds of artifacts or features.

LOCATABLE MINERALS. Minerals subject to disposal and development through the Mining Law of 1872 (as amended). Generally includes metallic minerals such as gold and silver and other materials not subject to lease or sale.

MECHANIZED VEHICLES. Mechanical transport designed to replace human labor and/or human physical capabilities. Mechanized vehicles include mountain bikes, horse drawn wagons, big game carriers, hand carts, and hang gliders.

METAPOPULATION. A system of local populations linked by dispersal.

MODERATE STANDS. Timber stands five to 100 acres in size.

MODIFICATION. A fundamental change in the provisions of a lease stipulation, either temporarily or for the term of the lease. A modification may include an exemption from or alteration to a stipulated requirement. The modification may or may not apply to all other sites within the leasehold to which the restrictive criteria apply.

MOST EFFICIENT LEVEL. The level of protection in which the cost of suppression is commensurate with or less than the resource values managed for.

MULTIPLE USE. In Section 103 of FLPMA, "... management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific, and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with relative consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest return or the greatest unit output."

NATIONAL REGISTER OF HISTORIC PLACES. A list of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture.

NATURAL FIRE. Any fire of natural origin (e.g., lightning, spontaneous combustion, volcanic activity) which is allowed to burn because it is accomplishing one or more resource management objectives.

NATURAL FUELS. Fuels resulting from natural processes and not directly generated or altered by land management practices.

NATURAL GEOLOGIC EROSION. The wearing away of the land (soil) surface by running water, waves, moving ice and wind, or by such processes as mass wasting and corrosion (solution and other chemical processes) versus induced erosion.

NATURALNESS. In Section 2(c) of the Wilderness Act, the wilderness characteristic in which an area "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable."

NECESSARY TASKS. Work requiring the use of motor vehicles. Examples include using motor vehicles to: pick up big game kills, repair range improvements, manage livestock, perform geophysical exploration activities and other types of leasable mineral exploration activity (other than casual use), perform mining claim functions resulting in less than 5 acres of surface disturbance as described in 43 CFR 3809, etc.

NONCONSUMPTIVE RECREATION. Wildlife-associated recreation which is not fishing, hunting, or trapping. Nonharvesting activities, such as feeding, photographing, and observing fish and other wildlife, picnicking, camping, etc., are nonconsumptive wildlife activities.

NONFUNCTIONAL. Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, etc., as listed in PROPER FUNCTIONING CONDITION. The absence of certain physical attributes such as a floodplain where one should be are indicators of nonfunctioning conditions. (Prichard, et al. 1993)

NONIMPAIRMENT CRITERIA. The criteria by which temporary impacts in a WSA can be rehabilitated to be substantially unnoticeable; the damaged environmental systems are capable of being rehabilitated to essentially the condition which existed on the date the activity was approved by BLM; and rehabilitation can be accomplished practically by the time of Congressional designation of the area as wilderness or, in the case of new mineral activities, within five years of designation.

NONMOTORIZED MECHANICAL TRANSPORT. Any contrivance for moving people or material in or over land, water, snow, or air, that has moving parts, and that is powered by a living or nonliving power source. This includes, but is not limited to, sailboats, hang gliders, parachutes, bicycles, game carriers, carts, and wagons. The term does not include wheelchairs when used as necessary medical appliances, nor does it include skis, snowshoes, nonmotorized river craft, sleds, travois, or similar primitive devices without moving parts.

NO SURFACE OCCUPANCY (NSO). No surface disturbing activities or surface disturbance, of any nature or for any purpose, will be allowed in the area of concern.

NOTICE TO LESSEES (NTLs). An NTL is a written order issued by the authorized officer to implement regulations and operating orders. It serves as instructions on specific item(s) of importance within a State, District, or Area.

OCCUPIED HABITAT. Habitat which has a species present at some time of the year. This can include yearlong habitat, lambing areas, winter ranges, and movement corridors.

OFF-ROAD VEHICLE. Any motorized vehicle capable of, or designated for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any nonamphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used in times of national defense emergencies (43 CFR 8340.0-5(a)).

OFF-ROAD VEHICLE MANAGEMENT DESIGNATIONS. Designations apply to all off-road vehicles regardless of the purposes for which they are being used. Emergency vehicles are excluded. The ORV designation definitions have been developed in cooperation with representatives of the U.S. Forest Service, U.S. Park Service, and BLM State and District personnel. BLM recognizes the differences between off-road vehicles and oversnow vehicles in terms of use and impact. Therefore, travel by oversnow vehicles will be permitted off existing routes and in all open or limited areas (unless otherwise specifically limited or closed to oversnow vehicles) if they are operated in a responsible manner without damaging the vegetation or harming wildlife.

Closed: Vehicle travel is prohibited in the area. Access by means other than motorized vehicle is permitted.

Open: Vehicle travel is permitted in the area (both on and off roads) if the vehicle is operated responsibly in a manner not causing, or unlikely to cause significant, undue damage to or disturbance of the soil, wildlife, wildlife habitat, improvements, cultural, or vegetative resources or other authorized uses of the public lands.

Limited: a. Vehicle travel is permitted only on existing roads and vehicle routes which were in existence prior to the date of designation in the Federal Register. Vehicle travel off of existing vehicle routes is permitted only to accomplish necessary tasks and only if such travel does not result in resource damage. Random travel from existing vehicle routes is not allowed. Creation of new routes or extensions and/or widening of existing routes is not allowed without prior written agency approval.

b. Vehicle travel is permitted only on roads and vehicle routes designated by BLM. In areas where final designation has not been completed, vehicle travel is limited to existing roads and vehicle routes as described above. Designations are posted as follows:

1. Vehicle route is open to vehicular travel.
2. Vehicle route is closed to vehicular travel.

c. Vehicle travel is limited by number or type of vehicle. Designations are posted as follows:

1. Vehicle route limited to four-wheel drive vehicles only.
2. Vehicle route limited to motorbikes only.
3. Area is closed to oversnow vehicles.

d. Vehicle travel is limited to licensed or permitted use.

e. Vehicle travel is limited to time or season of use. Posted:

Seasonal closure to all motor vehicles (the approximate dates of closure are indicated).

f. Where specialized restrictions are necessary to meet resource management objectives, other limitations may also be developed. Posted:

Recreational ORV play areas.

OVERMATURE. A description of a timber type (or stand) that is past the age of maturity as defined by the culmination of mean annual increment and exhibit characteristics of decadence which may include (but are not limited to) low growth rates, dead and dying trees, snags, and an accumulation of down woody materials.

PERENNIAL STREAM. A stream or reach of a stream which flows continuously throughout the year, and whose upper surface generally stands lower than the water table in the region adjoining the stream. A permanent or live stream.

PLAYA. The usually dry, nearly level, lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs in response to precipitation runoff, forming broad, shallow sheets of water which quickly gather and almost as quickly evaporate.

POLETIMBER. A class of live trees that measure 5.0 to 8.9 inches diameter breast height (dbh).

POTENTIAL HABITAT. An area which displays similar environmental characteristics (such as elevation, soil type, precipitation, associated species, slope and aspect) as the known habitat of the subject species.

PRECIPITATION. Any or all forms of water particles, liquid or solid, that fall from the atmosphere and reach the ground.

PRESCRIBED BURNING. Controlled application of fire to wildland fuels in either their natural or modified state, under specified environmental conditions which allow the fire to be confined to a predetermined area and at the same time to produce the fireline intensity and rate of spread required to attain planned resource management objectives.

PRESCRIBED FIRE. A fire burning within prescription, resulting from planned or unplanned ignition.

PRESCRIPTION. Written statement defining objectives to be attained as well as temperature, humidity, wind direction and wind speed, fuel moisture content, and soil moisture under which the fire will be allowed to burn, generally expressed as acceptable ranges of the various indices, and the limit of the geographic area to be covered.

PROPER FUNCTIONING CONDITION. Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation. See also FUNCTIONAL-AT RISK, NONFUNCTIONAL. (Prichard, et al. 1993)

PUBLIC LAND. Land administered by the Bureau of Land Management.

RAPTOR. A bird of prey, such as an eagle, hawk, or owl.

RARE SPECIES. Wildlife species whose populations are consistently small and widely dispersed, or whose ranges are restricted to a few localities, such that any appreciable reduction in numbers, habitat availability, or habitat condition might lead toward extinction.

RECLAMATION. The reconstruction of disturbed ecosystems by returning the land to a condition approximate or equal to that which existed prior to disturbance, or to a stable and productive condition compatible with the land use plan. The immediate goal of reclamation is to stabilize disturbed areas and protect both disturbed and adjacent undisturbed areas from unnecessary degradation.

RECREATION USER DAY. Any recreational activity taking place within a 24-hour period, or portion thereof, for each individual recreating on public lands.

RESOURCE DAMAGE. Defined as leaving long-term signs of seismic/vehicle use (ruts) or causing erosion or water pollution, creating undue degradation of other vegetative or wildlife resources.

RESTRICTED AREAS. Areas where mitigation such as seasonal restrictions is required to protect resource values.

RIPARIAN. Situated on or pertaining to the bank of a river, stream, spring, or other body of water. Normally used to refer to the plants of all types that grow rooted in the water table or streams, ponds, springs, etc.

RIPARIAN HABITAT. A highly valued wetland vegetation community found along or around streams, lakes, ponds, and other open water (both perennial and intermittent). This unique habitat is crucial to the continued existence of many fish and wildlife species known to occur in the area. Riparian vegetation helps maintain high water tables, stabilize pond and streambanks, create quality fish and wildlife habitat, prevent or reduce flooding, and maintain or improve water quality.

SALINITY. The concentration of dissolved salts in water. It is used to indicate the existence of saline soils. The electrical conductivity (EC) of a saturated extract is the standard measure of salinity and is expressed as mmhos/om. Classes of salinity and their electrical conductivity level: nonsaline - less than 2; very slightly saline - 2-4; slightly saline - 4-8; moderately saline - 8-16; strongly saline - greater than 16.

SAPLING. A tree that is greater than three feet in height and less than four inches in diameter.

SAWTIMBER. A class of live trees that measure 9 inches diameter breast height (dbh) and larger.

SECTION 106 CONSULTATION. Also known as the 36 CFR 800 process. Discussions between a federal agency official and the Advisory Council on Historic Preservation, State Historic Preservation Officer, and other interested parties concerning historic properties that could be effected by a specific undertaking. Section 106 is the portion of the National Historic Preservation Act that outlines the procedure. The procedure is codified in 36 CFR 800.

SEED/SAPS. Stand of trees composed of seedlings and or saplings.

SEEDLINGS. A tree grown from seed that has not reached a height of three feet nor a diameter of two inches.

SEVERE WINTER RELIEF. A documented survival range which may or may not be considered a CRUCIAL RANGE. It is used to a great extent, only in occasionally extremely severe winters (e.g., 2 years out of 10). It may lack habitat characteristics which would make it attractive or capable of supporting major portions of the population during normal years but is used by and allows at least a significant portion of the population to survive the occasional extremely severe winter.

SMOKE MANAGEMENT. Application of knowledge of fire behavior and meteorological processes to minimize degradation of air quality during prescribed fires.

SOLID WASTE. A solid waste is any solid, liquid, or contained gaseous material that is no longer used and is either disposed of, incinerated, recycled, or stored until needed again. Excluded from this definition of solid wastes (by 40 CFR 261.2) are: a) domestic sewage, b) industrial wastewater discharges from point sources, c) irrigation return flow, and d) in situ mining materials.

SPECIAL EMPHASIS AREAS. An area containing one or a combination of unique resources or values that receive more intensive management (e.g., ACECs, Special Recreation Management Areas, Wild & Scenic Rivers, etc.).

SPECIAL FEATURES. Values present in an area under consideration for wilderness, such as ecological, geological, or other features of scientific, educational, scenic, or historical value. They are not required for wilderness designation, but their presence enhances an area's wilderness quality.

SPECIAL RECREATION MANAGEMENT AREA. BLM administrative units established to direct recreation program priorities, including the allocation of funding and personnel, to those public lands where a commitment has been made to provide specific recreation activity and experience opportunities on a sustained yield basis. This includes a long-term commitment to manage the physical, social, and managerial settings to sustain these activity and experience opportunities. Delineation is based on administrative/management criteria including the existence of Congressional designations, similar or interdependent recreation values, homogenous or interrelated recreation uses, land tenure and use patterns, transportation systems, administrative efficiency, intensity of use, high resource values, public concerns, or interagency considerations. These areas usually require a high level of recreation investment and/or management. They include recreation sites, but recreation sites alone do not constitute a special recreation management area.

SPECIAL STATUS PLANTS. Special Status Plant species are those which are proposed for listing, officially listed (T&E), or candidates for listing as threatened or endangered by the Secretary of the Interior under the provisions of the Endangered Species Act; those listed or proposed for listing by a state in a category implying potential endangerment or extinction; and those designated by each State Director as sensitive.

STABILIZED DUNE. A sand dune protected from wind action by a cover of vegetation.

STIPULATION. A restriction placed on an oil and gas lease or other use authorization to protect other resources (e.g., a seasonal restriction to protect big game in their winter range or in their calving areas). The restriction precludes or restricts activities.

SUPPRESS A FIRE. Extinguish a fire or contain it within specified boundaries.

SURFACE DISTURBANCE. Refers to any action created through mechanized or mechanical means that would cause soil mixing or result in alteration or removal of soil or vegetation and expose the mineral soil to erosive processes. Used in the literal context of actual, physical disturbance and movement or removal of the land surface and vegetation. See "Disturbance Factor for Wildlife."

THREATENED AND ENDANGERED SPECIES. As defined by the Endangered Species Act of 1973 as amended (P.L. 93-205; 87 Stat. 884), an endangered species means "any species which is in danger of extinction throughout all or a significant portion of its range" and a threatened species means "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Whether a species is threatened or endangered is determined by the following factors: (1) present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, sporting, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; or (5) other natural or human-made factors.

THRIVING NATURAL ECOLOGICAL BALANCE. The condition of the public range that exists when resource objectives related to wild horses in approved land use and/or activity plans have been achieved.

THRUST BELT. An intensely faulted belt of mountain ranges. Thrust faults are low angle ruptures in the earth's crust that relieved deep compressional forces. The surface expression of this tectonic activity is westward dipping formations exposed in ridges or mountain ranges. Each ridge moved horizontally and vertically to its position along at least one thrust fault.

TOPOGRAPHIC RELIEF. The positions and elevations of the natural or manmade features of an area that describe the configuration of its surface.

TRONA. A naturally occurring sodium sesquicarbonate that was formed in ancient saline lakes. It is generally honey or light brown in color, depending upon the impurities present. It is the major natural source of soda ash.

TUNNEL EFFECT. A visual resource management term used when a management activity has changed or altered the basic elements of the landscape (form, line, color, texture). A casual observer will notice a disrupting path through the landscape.

UNCONTROLLED FIRE. Any fire which threatens to destroy life, property, or natural resources, and (a) is not burning within the confines of firebreaks, or (b) is burning with such intensity that it could not be readily extinguished with ordinary tools commonly available.

UNDERTAKING. Any project, activity, or program that can result in changes in the character or use of historic properties, if any such historic properties are located in the area of potential effects. The project, activity, or program must be under the direct or indirect jurisdiction of a Federal agency or licensed or assisted by a Federal agency. Undertakings include new and continuing projects, activities, or programs and any of their elements not previously considered under Section 106.

UNIFORM FUELS. Fuels distributed continuously, thereby providing a continuous path for fire to spread.

UNNECESSARY OR UNDUE DEGRADATION. Impacts or disturbances greater than those which would normally result when the same or similar activity is being accomplished by a prudent person using the best reasonably available technology in a usual, customary, and proficient manner that takes into

consideration the effects of the activity on other resources and land uses, including those resources and uses outside the area of activity. Unnecessary and undue degradation may involve failure to initiate and complete reasonable mitigation measures, including reclamation of disturbed areas, creation of a nuisance, or failure to comply with applicable environmental protection statutes and regulations.

UNOCCUPIED HISTORICAL HABITAT. Habitat which is known to have been previously occupied by a species but has no animals at the present time.

UNOCCUPIED SUITABLE HABITAT. Habitat where a species is not found at the present time, has not been recorded as historical habitat, but which apparently contains suitable physical and biological characteristics necessary for that particular species.

VALUES AT RISK. Any or all natural resources, improvements, or other values which may be jeopardized if a fire occurs.

VEGETATION MANIPULATION. Land treatment projects designed to improve the growth of more desirable plant species. Biological, chemical, or mechanical methods of vegetation removal, including prescribed burns, are used.

VISUAL RESOURCE MANAGEMENT CLASSES (definition of).

Class I. The objective of this class is to maintain a landscape setting that appears unaltered by humans. It is applied to wilderness areas, some natural areas, wild portions of the wild scenic rivers, and other similar situations where management activities are to be restricted.

Class II. The objective of this class is to design proposed alterations so as to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III. The objective of this class is to design proposed alterations so as to partially retain the existing character of the landscape. Contrasts to the basic elements (form, line, color, and texture) caused by a management activity may be evident and begin to attract attention in the characteristic landscape. However, the changes should remain subordinate to the existing characteristic landscape. Structures located in the foreground distance zone (0-1/2 mile) often create a contrast that exceeds the VRM class, even when designed to harmonize and blend with the characteristic landscape. This may be especially true when a distinctive architectural motif or style is designed. Approval by the District Manager is required on a case-by-case basis to determine whether the structure(s) meet the acceptable VRM class standards, and if not, whether they add acceptable visual variety to the landscape.

Class IV. The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. Contrasts may attract attention and be a dominant feature of the landscape in terms of scale; however, the change should repeat the basic elements (form, line, color, and texture) inherent in the characteristic landscape. Structures located in the foreground distance zone (0-1/2 mile) often create a contrast that exceeds the VRM class, even when designed to harmonize and blend with the characteristic landscape. This may be especially true when a distinctive architectural motif or style is designed. Approval by the District Manager is required on a case-by-case basis to determine whether the structure(s) meet the acceptable VRM class standards, and if not, whether they add acceptable visual variety to the landscape.

Rehabilitation Area. Change is needed or change may add acceptable visual variety to an area. This class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding landscape. This class would apply to areas identified in the scenic evaluation where the quality class has been reduced because of unacceptable cultural modification. The contrast is inharmonious with the characteristic landscape. It may also be applied to areas that have the potential for enhancement; i.e., add acceptable visual variety to an area or site. It should be considered an interim or short-term classification until one of the other VRM class objectives can be reached through rehabilitation or enhancement. The desired visual resource management class should be identified.

WAIVER. A permanent exemption from a lease stipulation for the entire leasehold.

WETLAND. Lands where at least periodic inundation or saturation with water (either from the surface or subsurface) is the dominant factor determining the nature of soil development and the types of plant and animal communities living there. These include the entire zones associated with streams, lakes, ponds, springs, canals, seeps, wet meadows, and some aspen stands. Wetlands support all fish. They also support more species of wildlife (in higher densities) than any other habitat type in the planning area. They comprise less than one percent of the public land acreage.

Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this document, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

WILDFIRE. Any fire occurring on wildland that neither meets management objectives nor occurs within a prescribed fire area, thus requiring a suppression response.

WINDOWS. Short segments of right-of-way corridor utilized when designating a full length right-of-way corridor is not feasible.

WITHDRAWAL. Removal or withholding of public lands, by statute or Secretarial order, from operation of some or all of the public land laws. A mineral withdrawal includes public lands potentially valuable for leasable minerals, precluding the disposal of the lands except with a mineral reservation clause unless the lands are found not to contain a valuable deposit of minerals. A mineral withdrawal is the closing of an area to mineral location and development activities.

ABBREVIATIONS

ACEC	-	Area of Critical Environmental Concern
ACHP	-	Advisory Council on Historic Preservation
AIRFA	-	American Indian Religious Freedom Act
AMP	-	Allotment Management Plan
APD	-	Application for Permit to Drill (an oil or gas well)
APHIS	-	Animal and Plant Health Inspection Service (USDA)
ARPA	-	Archeological Resource Protection Act
AUM	-	Animal unit month
BBLS	-	Barrels (a measure of the quantity of condensate)
BCF	-	Billion cubic feet (a measure of quantity of natural gas)
BLM	-	Bureau of Land Management
CFR	-	Code of Federal Regulations
CRMP	-	Cultural Resource Management Plan
CSR	-	Channel stability rating
DBH	-	Diameter at Breast Height
EA	-	Environmental Assessment
EIS	-	Environmental Impact Statement
FLPMA	-	Federal Land Policy and Management Act (of 1976)
FMU	-	Forest management unit
FR	-	Federal Register
FTE	-	Full-time equivalent
GRRA	-	Green River Resource Area
HMP	-	Habitat management plan
IBLA	-	Interior Board of Land Appeals
KGS	-	Known geologic structure
KSLA	-	Known sodium leasing area
MFP	-	Management Framework Plan (pre-FLPMA BLM land use plan)
MBF	-	Thousand board feet (a measure of timber volume)
MCF	-	Thousand cubic feet
MMBF	-	Million board feet (a measure of timber volume)
MMCF	-	Million cubic feet
MSL	-	Mean sea level
NEPA	-	National Environmental Policy Act (of 1969)
NHL	-	National Historic Landmark
NHPA	-	National Historic Preservation Act
NNL	-	National Natural Landmark
NPS	-	National Park Service
NRA	-	National Recreation Area
NRHP	-	National Register of Historic Places
NSO	-	No Surface Occupancy (a stipulation on an oil and gas lease)
NWPS	-	National Wilderness Preservation System
ORV	-	Off-road vehicle
PRLA	-	Preference Right Lease Application
RAMP	-	Recreation Area Management Plan
RCRA	-	Resource Conservation and Recovery Act (1976)
RMP	-	Resource Management Plan (BLM land use plan under FLPMA)
SHPO	-	State Historic Preservation Officer
SRMA	-	Special Recreation Management Area
TCLP	-	Toxicity Characteristic Leaching Procedure
USFWS	-	U.S. Fish and Wildlife Service
VRM	-	Visual Resource Management
WGFD	-	Wyoming Game and Fish Department
WHHA	-	Wild Horse Herd Area
WSA	-	Wilderness Study Area
W&SR	-	Wild & Scenic River(s)

BIBLIOGRAPHY

Anderson & Kelly, Inc. 1983. "Hydrogeologic Evaluation of Potential Aquifers Near South Superior, Wyoming." Laramie, Wyoming.

Armitage, C.L., J.C. Newberry-Creasman, J.C. Mackey, C.M. Love, D. Heffington, K. Harvey, J.E. Sall, K. Dueholm, and S.D. Creasman 1982. "The Deadman Wash Site," *Cultural Resource Management Report No. 6*, Archaeological Services, Western Wyoming College, Rock Springs, Wyoming, pages 17, 77-78.

Barlow and Haun, 1993. Written communication of April 16, 1993.

Bastron, A.F., *et al.*, 1965. Construction Materials Survey, Interstate 80, Flaming Gorge Junction to Point of Rocks Section. Wyoming State Highway Department, Cheyenne, Wyoming.

Bastron, A.F., *et al.*, 1965. Construction Materials Survey, Interstate Route 80, Granger Junction to Flaming Gorge Junction. Wyoming State Highway Department, Cheyenne, Wyoming.

Bayley, Richard W.; Proctor, Paul Dean; and Condie, Kent C. 1973. "Geology of the South Pass Area, Fremont County, Wyoming," U.S. Geological Survey Professional Paper, 793, 39 p.

Benson, P.C. 1979. "Land Use and Wildlife with Emphasis on Raptors."

Blackwelder, E. 1950. "Pleistocene Geology, the Green River Basin, Wyoming," *Wyoming Geological Association Guidebook*, Fifth Annual Field Conference, pp. 81-85.

Bradley, W.H. 1964. "Geology of Green River Formation and Associated Eocene Rocks in Southwestern Wyoming and Adjacent Parts of Colorado and Utah," U.S. Geological Survey Professional Paper, 496-A, pp. A1-A86.

Bradley, W.H. and H.P. Eugster 1969. "Geochemistry and Paleolimnology of the Trona Deposits and Associated Authigenic Minerals of the Green River Formation of Wyoming," U.S. Geological Survey Professional Paper, 496-B, pp. B1-B76.

Breithaupt, B.H. 1982. "Paleontology and paleoecology of the Lance Formation (Maastrichtian), east flank of Rock springs Uplift, Sweetwater County, Wyoming," Contributions to Geology, University of Wyoming, 21(2):123-151.

Bryan, A. 1986, Editor. *New Evidence for the Pleistocene Peopling of the Americas*. Center for the Study of Early Man. University of Maine, Orono, Maine.

Buchheim, H.P. and Surdam, R.R. 1981. "Paleoenvironments and fossil fishes of the Laney Member, Green River Formation, Wyoming" in Communities of the Past, Gray, J., et al. (eds.). Hutchinson Ross Publishing Co., 415-452.

California Energy Commission, December, 1991. "1991 Fuels Report Working Paper: Natural Gas Market Outlook."

Carlson, Blythe Anne Williams 1989. *A New Early Wasatchian Fauna From the Washakie Basin, Wyoming* (Master's Thesis), University of Colorado.

Chase, J.D. 1991. "Coalbed Methane Well Economic Analysis," Bureau of Land Management, Rock Springs, District Office.

Clayton, L.B. and K.A. Best 1981. *Union Pacific Land Grant, 1980 Oil Shale Evaluation Program Report, Green River and Washakie Basins, Sweetwater County, Wyoming*. Rocky Mountain Energy, 53 p.

Cope, E.D. 1872. "On the existence of Dinosauria in the Transition Beds of Wyoming." American Philosophical Society Proceedings 12:481-483.

Dietrich, D.L. and D.E. Mussard 1985. *A Description of the Pollution Potential Index of the TAPAS Two-Dimensional Winds Model.* Tech Note, U.S. Forest Service Research Agreement 18-K4-341. Air Resource Specialists, Fort Collins, Colorado.

Dorn, R. 1980. *Illustrated Guide to Special Interest Vascular Plants of Wyoming*. U.S. Fish and Wildlife Service and Bureau of Land Management.

Evans, D.L. 1980. "Iimpacts of Surface Mining on Ferruginous Hawks: Recommendations for Monitoring and Mitigation."

Feduccia, A. and L.D. Martin 1976. "The Eocene zygodactyl birds of North America (Aves:Piciformes)." Smithsonian Contributions to Paleobiology 27:101-110.

Fenneman, N.M. 1931. *Physiography of Western United States*. McGraw-Hill Book Company, Inc., New York and London, pp. 92-150.

BIBLIOGRAPHY

Fox, D.G., D.L. Dietrich, and J.E. Childs 1983. "TAPAS User Support Documentation." U.S. Forest Service Research Contract 28-K4-257. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.

Frison, George C. 1978. *Prehistoric Hunters of the High Plains*. Academic Press, Inc., New York.

Frison, George C. 1988. "Paleoindian Subsistence and Settlement During Post-Clovis Times on the Northwestern Plains, the Adjacent Mountain Ranges and Intermontane Basins," in *Indians Before Columbus: Ice-Age Origins*, edited by Ronald C. Carlisle, *Ethnology Monographs,* No. 12.

Gas Research Institute, 1992. "The Long Term Trends in U.S. Gas Transportation: 1992 Edition of the GRI Baseline Projection of U.S. Energy Supply and Demand to 2010."

Gazin, C.L. 1952. "The Lower Eocene Knight Formation of Western Wyoming and its Mammalian Faunas." Smithsonian Miscellaneous Collections, v. 117, no. 18, 82 pages.

Gazin, C.L. 1962. "A further study of the lower Eocene mammalian faunas of southwestern Wyoming." Smithsonian Miscellaneous Collectons 114(1):1-198.

Gazin, C.L. 1976. "Mammalian Faunal Zones of the Bridger Middle Eocene." Smithsonian Contributions to Paleobiology No. 26, Smithsonian Institution, Washington, D.C., 25 pages.

Geo/Resource Consultants, Inc. 1984. *Green River Basin Geologic Resources Inventory.*

Geological Survey of Wyoming, 1986. "Map Series 21: Construction Materials Map of Wyoming." Compiled by Ray E. Harris and John E. Meyer.

Geological Survey of Wyoming, 1991. "Wyoming Geo-Notes," No. 30.

Glass, Gary B. 1981. "Coal Deposits of Wyoming." in *Wyoming Geological Association Guidebook*, pp. 181-236

Grande, Lance 1980. "Paleontology of the Green River Formation, with a Review of the Fish Fauna." Geological Survey of Wyoming, Bulletin No. 63, 333 pages.

Gries, Robbie 1983. "Oil and Gas Prospecting Beneath Precambrian of Foreland Thrust Plates in Rocky Mountains," American Association of Petroleum Geologists Bulletin, v. 67, no. 1, pp. 1-28.

Hansen, W.R. 1969. "The Geologic Story of the Uinta Mountains," U.S. Geological Survey Bulletin 1291, 144 p.

Harmata, A.R. 1991. "Impacts of Oil and Gas Development on Raptors Associated with Kevin Rim, Montana."

James, L.F., and Keller, R.F., et al. 1980. "Plants Poisonous to Livestock in the Western United States," Agriculture Information Bulletin No. 418, U.S. Department of Agriculture.

Knight, D.H., R.J. Hill, and A.T. Harrison 1976. "Potential Natural Landmarks in the Wyoming Basin (Terrestrial and aquatic ecosystems)." Prepared for National Park Service under Contract No. 9900X20047 by Department of Botany, University of Wyoming.

Kuchler, A.W. 1975. "Revised Map for Potential Natural Vegetation ofthe Conterminous United States." Map Scale 1:3,168,000.

LeBar, F.P. 1980. "The Story of Coal in Southwestern Wyoming," 28 p.

Love, J.D. 1961. "Definition of Green River, Great Divide, and Washakie Basins, Southwestern Wyoming," American Association of Petroleum Geologists Bulletin, v. 45, no. 10, pp. 1749-1755.

Love, J.D. and Christiansen, A.C. 1985. "Geologic Map of Wyoming," U.S. Geological Survey.

Marriott, H. 1988. *Draft Habitat Management Plan for Threatened, Endangered, and Candidate Plant Species and Their Habitats on the Rock Springs District, Bureau of Land Management.* Wyoming Natural Diversity Database, Rocky Mountain Heritage Task Force, the Nature Conservancy.

Marriott, H. 1991. "Status Report for *Descurainia Torulosa* (Wyoming Tansymustard), Sweetwater County, Wyoming." Wyoming Natural Diversity Database, The Nature Conservancy. Prepared for the Bureau of Land Management, Rock Springs, Wyoming.

BIBLIOGRAPHY

Marriott, Hollis 1991. Personal Communication.

Marsh, O.C. 1876. "Notice of new Tertiary mammals." American Journal of Science 12:401-404.

Martner, B.E. 1986. *Wyoming Climate Atlas.* University of Nebraska Press, Lincoln, Nebraska, 432 pages.

Morse, L.E. and M.S. Henifin, Editors, 1981. *Rare Plant Conservation,* The New York Botanical Garden, Bronx, New York, pages 261-282.

National Petroleum Council, 1992. "The Potential for Natural Gas in the United States, Volume VI."

Olson, S.L. 1977. "A lower Eocene frigatebird from the Green River Formation of Wyoming (Pelecaniformes:Fregatidae)." Smithsonian Contributions to Paleobiology 35:33pp.

Olson, S.L. and A. Feduccia 1980. "*Presbyornis* and the origin of the Anseriformes (Aves:Charadriimorphae)." Smithsonian Contributions to Zoology 323:24pp.

Peterson, James A. 1988. "Overview: Carbonate Reservoir Facies, Wyoming and Parts of Montana," in Goolsby, Steven M. and Longman, Mark W. (eds.), *Occurrence and Petrophysical Properties of Carbonate Reservoirs in the Rocky Mountain Region,* pp. 75-96. The Rocky Mountain Association of Geologists, Denver, Colorado.

Picard, M. Dane 1975. "Facies, Petrography and Petroleum Potential of Nugget Sandstone (Jurassic), Southwestern Wyoming and Northeastern Utah." Rocky Mountain Association of Geologists Symposium, pp. 109-127.

Pipiringos, George N. 1961. "Uranium-Bearing Coal in the Central Part of the Great Divide Basin," U.S. Geological Survey Bulletin 1099-A, pp. A1-A104.

Prichard, D., et al. 1993. *Riparian Area Management - Process for Assessing Proper Functioning Condition,* Technical Review 1737-9. USDI, Bureau of Land Management, Denver, Colorado. p. 4.

Riebau, A.R.; D.G. Fox; D.L. Dietrich; D.E. Mussard; and W.E. Marlatt 1986. "Regional Risk Identification Analysis Application to Resource Development of H_2S-Contaminated Natural Gas Fields in Southwest Wyoming" in *Proceedings of the Geographic Information Systems Workshop.* American Society for Photogrammetry and Remote Sensing, Atlanta, Georgia.

Roehler, Henry W. 1965. "Summary of Pre-Laramide Late Cretaceous Sedimentation in the Rock Springs Uplift Area," Wyoming Geological Association 19th Field Conference, pp. 10-12.

Roehler, H.W., 1972. Geologic Map of the Four J Rim Quadrangle, Sweetwater County, Wyoming and Moffat County, Colorado. Map GQ-1002, U.S. Geological Survey.

Roehler, H.W., 1973. Geologic Map of the Chicken Creek East Quadrangle, Sweetwater County, Wyoming. Map GQ-1128, U.S. Geological Survey.

Roehler, H.W., 1973. Geologic Map of the Potter Mountain Quadrangle, Sweetwater County, Wyoming. Map GQ-1082, U.S. Geological Survey.

Root, F.K., Glass, G.B., and Lane, D.W., 1973. "Geologic Map Atlas and Summary of Economic Mineral Resources, Sweetwater County," Geological Survey of Wyoming, County Resource Series-2.

Rose, Peter R. 1977. "Mississippian Carbonates Shelf Margins, Western United States." *Wyoming Geological Association, 29th Annual Field Conference Guidebook,* pp. 155-172.

Rosgen, D. 1985. "A Stream Classification System." in *Riparian Ecosystems and Their Management: Reconciling Conflicting Uses. Proceedings of the First North American Riparian Conference,* April 16-18, 1985, Tucson, Arizona. GTR-RM120, pp. 91-95.

Ross, R.J., Jr. 1976. "Ordovician Sedimentation in the Western United States." Rocky Mountain Association of Geologists Symposium, pp. 109-133.

Rykaczewski, D.; M. Ryne; C. Ewing; C. Smith; and F. Ogliaro 1980. "Baseline Climate and Air Quality for BLM Lands in Wyoming," Vol. 1, *Science Applications,* 476 pages. La Jolla, California.

Satterlund, Donald R., 1972. "Wildland Watershed Management." John Wiley and Sons, Inc.

Savage, D.E., B.T. Waters, and J.H. Hutchison 1972. "North-western border of the Washakie Basin, Wyoming." Society of Vertebrate Paleontology Guidebook, Field Conference on Tertiary Biostratigraphy of Southern and Western Wyoming, 32-39.

Science Applications, Inc. 1980. "Final Report: Baseline Climate and Air Quality for BLM Lands in Wyoming. La Jolla, California. Vol. I, Chapters 1-4, page 280, 7/30/80.

BIBLIOGRAPHY

Sharrock, Floyd W., 1966. "Prehistoric Occupation Patterns in Southwest Wyoming and Cultural Relationships with the Great Basin and Plains Culture Areas." *University of Utah, Anthropological Papers*, No. 77.

Sheridan, Douglas M.; Maxwell, Charles H.; and Collier, John T. 1961. "Geology of the Lost Creek Schroeckingerite Deposits Sweetwater County, Wyoming." U.S. Geological Survey Bulletin 1087-J, pp. 391-478.

Skinner, B.J. 1976. *Earth Resources*, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

State of Wyoming, Department of Administrative Fiscal Control 1989. *Wyoming Income and Employment Report*, 10th edition (October 1989).

State of Wyoming, Department of Environmental Quality 1990. "Water Quality Rules and Regulations, Chapter 1." Water Quality Division, Cheyenne, Wyoming.

State of Wyoming, Employment Security Commission 1989. *Wyoming Annual Planning Report, Fiscal Year 1989.*"

State of Wyoming 1988. *BiWeekly Ag Statistics*, September 30, 1988.

State of Wyoming 1988. *BiWeekly Ag Statistics*, October 14, 1988.

State of Wyoming 1994. Personal communication with Jim Case of Geological Survey of Wyoming.

State of Wyoming, State Inspector of Mines 1990. *Annual Report of the State Inspector of Mines of Wyoming for the year ending 12/31/90.*

Stilwell, Dean P. 1991. "Reasonable Foreseeable Development Scenario of Coalbed Methane Development in the Green River Resource Area."

Stoddard and Smith, *Rangeland Management*, Second Edition, 1955.

Thomaidis, N.D. 1973. "Church Buttes Arch, Wyoming and Utah," *Wyoming Geological Association 25th Annual Field Conference Guidebook*, pp. 35-40.

Trudell, L.G.; H.W. Roehler; and J.W. Smith 1973. *Geology of Eocene Rocks and Oil Yields of Green River Oil Shales on Part of Kinney Rim, Washakie Basin, Wyoming.* U.S. Bureau of Mines Report of Investigations No. 7775, 151 p.

Turnbull, William D. 1978. "The Mammalian Faunas of the Washakie Formation, Eocene Age, of Southern Wyoming, Part I, Introduction, The geology, history, and setting." Fieldiana Geology Vol. 33, No. 30, 569-601.

United States Department of Agriculture, Forest Service 1983. *Forest Habitat Types of Eastern Idaho-Western Wyoming.*

United States Department of the Interior, 1993. "Technical Reference 1737-9, Riparian Area Management - Process for Assessing Proper Functioning Condition," 80 pp.

United States Department of the Interior, 1989. "Technical Reference 1737-4, Riparian Area Management - Grazing Management in Riparian Areas," 48 pp.

United States Department of the Interior, 1994. "Technical Reference 1737-11, Riparian Area Management - Process for Assessing Proper Functioning Condition for Lentic Riparian/Wetland Areas," 46 pp.

United States Department of the Interior, Bureau of Land Management 1981a. *Draft Environmental Assessment of Oil and Gas Development in Big Sandy/Salt Wells Resource Areas.* Rock Springs District, Wyoming.

United States Department of the Interior, Bureau of Land Management 1981b. *Draft Rock Springs District Designated Noxious Weed Treatment Program Environmental Assessment Record.* Rock Springs, Wyoming.

United States Department of the Interior, Bureau of Land Management 1981c. *Land Use Decisions: Big Sandy Area Coal, Final MFP Decisions.* Rock Springs District, Wyoming.

United States Department of the Interior, Bureau of Land Management 1981d. *Land Use Decisions: Salt Wells Area Coal, Final MFP Decisions.* Rock Springs District, Wyoming.

BIBLIOGRAPHY

United States Department of the Interior, Bureau of Land Management 1982. *Final Decision Record and Environmental Assessment of Coal Preference Right Lease Applications.* Rock Springs District, Wyoming.

United States Department of the Interior, Bureau of Land Management 1984. *Record of Decision and Rangeland Program Summary for the Salt Wells-Pilot Butte Grazing Environmental Impact Statement.* Rock Springs District, Wyoming.

United States Department of the Interior, Bureau of Land Management 1985. *Final EIS: Northwest Area Noxious Weed Control Program.* Washington: Government Printing Office.

United States Department of the Interior, Bureau of Land Management 1986a. *Oregon/Mormon Pioneer National Historic Trails Management Plan.* Washington: Government Printing Office.

United States Department of the Interior, Bureau of Land Management 1986b. *Record of Decision: Northwest Area Noxious Weed Control Program.* Washington: Government Printing Office.

United States Department of the Interior, Bureau of Land Management 1987a. *Final Adobe Town-Ferris Mountain Wilderness Environmental Impact Statement.* Rawlins District, Rawlins, Wyoming.

United States Department of the Interior, Bureau of Land Management 1987b. *Final EIS: Supplement to the Northwest Area Noxious Weed Control Program.* Washington: Government Printing Office.

United States Department of the Interior, Bureau of Land Management 1987. *Interim Management Policy and Guidelines for Lands Under Wilderness Review.* Update Document H-8550-1. Washington: Government Printing Office.

United States Department of the Interior, Bureau of Land Management 1988. *Cody Resource Management Plan/Final Environmental Impact Statement.* Cody Resource Area. Washington: Government Printing Office.

United States Department of the Interior, Bureau of Land Management 1988. *Pinedale Resource Management Plan/Record of Decision.* Pinedale Resource Area. Washington: Government Printing Office.

United States Department of the Interior, Bureau of Land Management 1989a. *Draft EIS: Vegetation Treatment on BLM Lands in Thirteen Western States.* Washington: Government Printing Office.

United States Department of the Interior, Bureau of Land Management 1991. "Riparian-Wetland Initiative for the 1990's."

United States Department of the Interior and United States Department of Agriculture 1989b. "Surface Operating Standards for Oil and Gas Exploration and Development," 45 pages.

United States Department of the Interior, Bureau of Land Management 1990a. *BWAB Incorporated Environmental Assessment. Proposed Exploration Drilling 1990-1991, February 1990.* Rock Springs, Wyoming, BLM-WY-048-EAO-013.

United States Department of the Interior, Bureau of Land Management 1990b. *Final Rock Springs Wilderness Environmental Impact Statement.* Rock Springs District, Rock Springs, Wyoming.

United States Department of the Interior, Bureau of Land Management 1990c. *Rangeland Program Summary Update.* Rock Springs District, Green River Resource Area.

United States Department of the Interior, Bureau of Land Management 1994. *Animal Damage Control EA.*

United States Department of the Interior, Bureau of Reclamation 1989. "Concluding the Study on Big Sandy River Unit, Wyoming," Planning Report. Upper Colorado Regional Office, Salt Lake City, Utah.

United States Environmental Protection Agency 1976. *Quality Criteria for Water.* U.S. Government Printing Office, 256 pp., Washington D.C.

University of Wyoming, College of Agriculture. Input/Output Model.

Wallem, D.B.; R.C. Surdam; and J.R. Steidtmann 1981. "Source Rock Analysis of the Lower Cretaceous Bear River Formation-Western Wyoming Overthrust Belt." in *Wyoming Geological Association Guidebook, 1981.*

BIBLIOGRAPHY

Welder, G.E. and McGreevy, L.J., 1966. Groundwater Reconnaissance of the Great Divide and Washakie Basins and Some Adjacent Areas, Southwestern Wyoming. Hydrologic Investigations Atlas HA-219, U.S. Geological Survey.

Welder, G.E., 1968. Groundwater Reconnaissance of the Green River Basin, Southwestern Wyoming. Hydrolic Investigations Atlas HA-290, U.S. Geological Survey.

Wiltschko, David V. and Dorr, John A., Jr. 1983. "Timing of Deformation in Overthrust Belt and Foreland of Idaho, Wyoming, and Utah." American Association of Petroleum Geologists Bulletin, v. 67, no. 8, pp. 1304-1322.

Wright, Henry A., Neuenschwander, Reon F., and Britton, Carlton M. 1979. "The Role and Use of Fire in Sagebrush - Grass and Pinyon-Juniper Plant Communities, a State-of-the-Art-Review." U.S. Department of Agriculture, Forest Service General Technical Report INT-58. Intermountain Forest and Range Experiment Station, Ogden, Utah. September 1979.

Wyant, Donald G.; Sharp, William N.; and Sheridan, Douglas M. 1956. "Reconnaissance Study of Uranium Deposits in the Red Desert Sweetwater County, Wyoming." U.S. Geological Survey Bulletin 1030-I, pp. 237-308.

Wyoming Game and Fish Department 1994. Personal communication with Greg Hyatt and Tom Christiansen.

Wyoming Oil and Gas Commission 1992. "1992 Statistical Summaries."

☆ U.S. GOVERNMENT PRINTING OFFICE: 1996 - 774-075 / 24005 REGION NO. 8

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

Map A
Proposed Plan

Land Status, ACECs, and Other Management Areas

Green River Planning Area

109° 14' 46"
42° 36' 28"
42° 04' 05"
108° 19' 12"
41° 44' 52"
109° 56' 23"

Candidate Plant
South Pass Historic Landscape
South Pass Historic Landscape
Oregon Buttes
Red Desert Watershed
Farson
Eden
Greater Sand Dunes
Steamboat
White Mountain Petroglyphs Existing ACEC
Cedar Canyon
Natural Corrals
Sweetwater River
191
28
30 N
29 N
28 N
27 N
26 N
25 N
24 N
23 N
22 N
21 N
20 N
R 112 W
R 111 W
R 110 W
R 109 W
R 108 W
R 107 W
R 106 W
R 105 W
R 104 W
R 103 W
R 102 W
R 101 W
R 100 W
R 99 W
R 98 W
R 97 W

N

Land Administered by Bureau of Land Management

Land Administered by Fish and Wildlife Service

Land Administered by Bureau of Reclamation

Land Administered by Forest Service

Land Administered by State of Wyoming

Privately Owned Land

Existing Area of Critical Environmental Concern (ACEC)
BLM Administered Land

Proposed Area of Critical Environmental Concern (ACEC)
BLM Administered Land

Other Management Area
BLM Administered Land

White Mountain Petroglyphs Existing ACEC

Cedar Canyon

Natural Corrals

Rock Springs

Green River

Candidate Plant

Pine Spring

Pine Spring

Candidate Plant

Candidate Plant

Sugarloaf

Currant Creek Basin

Sage Creek

Flaming Gorge Reservoir

Red Creek

Pine Mountain

Candidate Plant

Monument Valley

Green River

80

530

191

430

T 22 N

T 21 N

T 20 N

T 19 N

T 18 N

T 17 N

T 16 N

T 15 N

T 14 N

T 13 N

T 12 N

R 114 W

R 113 W

R 112 W

R 111 W

R 110 W

R 109 W

R 108 W

R 107 W

R 106 W

R 105 W

R 104 W

R 103 W

R 102 W

R 101 W

R 100 W

41° 44' 52"

109° 56' 23"

40° 59' 43"

110° 16' 41"

40° 57' 58"

108° 34' 08"

108° 09' 37"

41° 29' 09"

N

Scale in Miles

0 5 10 15 20

1:250,000

☆ U.S. GOVERNMENT PRINTING OFFICE — 1998 - 776-004

Map B

Mineral Status

Green River Planning Area

109° 14' 46"

42° 36' 28"

T 30 N

T 29 N

T 28 N

T 27 N

T 26 N

T 25 N

T 24 N

T 23 N

T 22 N

T 21 N

T 20 N

Sweetwater River

191

28

372

Farson

Eden

R 112 W | R 111 W | R 110 W | R 109 W | R 108 W | R 107 W | R 106 W | R 105 W | R 104 W | R 103 W | R 102 W | R 101 W | R 100 W | R 99 W | R 98 W | R 97 W

42° 04' 05"

108° 19' 12"

41° 44' 52"

109° 56' 23"

N

All Federal Minerals

Federal Coal

Federal Oil and Gas

Federal Oil, Gas, and Coal

Other Federal Minerals

All Federal Minerals

Federal Coal

Federal Oil and Gas

Federal Oil, Gas, and Coal

Other Federal Minerals

Privately Owned Minerals

41° 44' 52"

109° 56' 23"

372

Green River

80

Rock Springs

Green River

580

191

430

80

530

Flaming Gorge Reservoir

T 23 N

T 22 N

T 21 N

T 20 N

T 19 N

T 18 N

T 17 N

T 16 N

T 15 N

T 14 N

T 13 N

T 12 N

R 114 W

R 113 W

R 112 W

R 111 W

R 110 W

R 109 W

R 108 W

R 107 W

R 106 W

R 105 W

R 104 W

R 103 W

R 102 W

R 101 W

R 100 W

40° 59' 43"

110° 16' 41"

108° 09' 37"

41° 29' 09"

40° 57' 58"

108° 34' 08"

N

Scale in Miles

0 5 10 15 20

1:250,000

Map C
Grazing Allotments and Land Status
Green River Planning Area

109° 14' 46"
42° 36' 28"
42° 04' 05"
108° 19' 12"
41° 44' 52"
109° 56' 23"

Sweetwater River

Farson
Eden

0340400 1302100 0320400 1301900 0330300 1302000 1301400 1300500 1300400 0320200 1310000 1301000 1311000 0300000 1310500 1302600 1300500 1300200 1300900 1310900 1300100 1300300 0320300 1300600 0320700 1302700 1310200 1301100 1302300 0330700 1310600 0320300 1310300 0320600 1301300 1301700 1302400 0302800 1300700 1301200 1300200 1301500 1311400 0321400 1311500 0321500 1302500 0301600 1301800

Spring
Water Well
Seep Hole
Pit
Reservoir

Spring

Water Well

Seep Hole

Pit

Reservoir

Windmill

Trough

Pipeline

Grazing Allotment Boundary

1310600 Grazing Allotment Number

Land Administered by Bureau of Land Management

Land Administered by Other Federal Agencies

Land Administered by State of Wyoming

Privately Owned Land

41° 44' 52"

109° 56' 23"

40° 59' 43"

110° 16' 41"

108° 09' 37"

41° 29' 09"

40° 57' 58"

108° 34' 08"

1302500

03016D0

1301800

1301800

1301800

1301800

1301800

0400100

0400200

0402700

0400300

0401000

0400900

0400800

0400700

0400300

0400400

0400600

0400500

0401100

0401100

0401201

0401203

0401205

0401204

0401202

0401206

0401300

0401400

0401500

0401601

0401602

0401700

0401800

0401900

0402000

0402100

0402200

0402300

0402400

0402500

0402600

Green River

Rock Springs

Flaming Gorge Reservoir

372

80

530

530

430

191

80

Scale in Miles

0 5 10 15 20

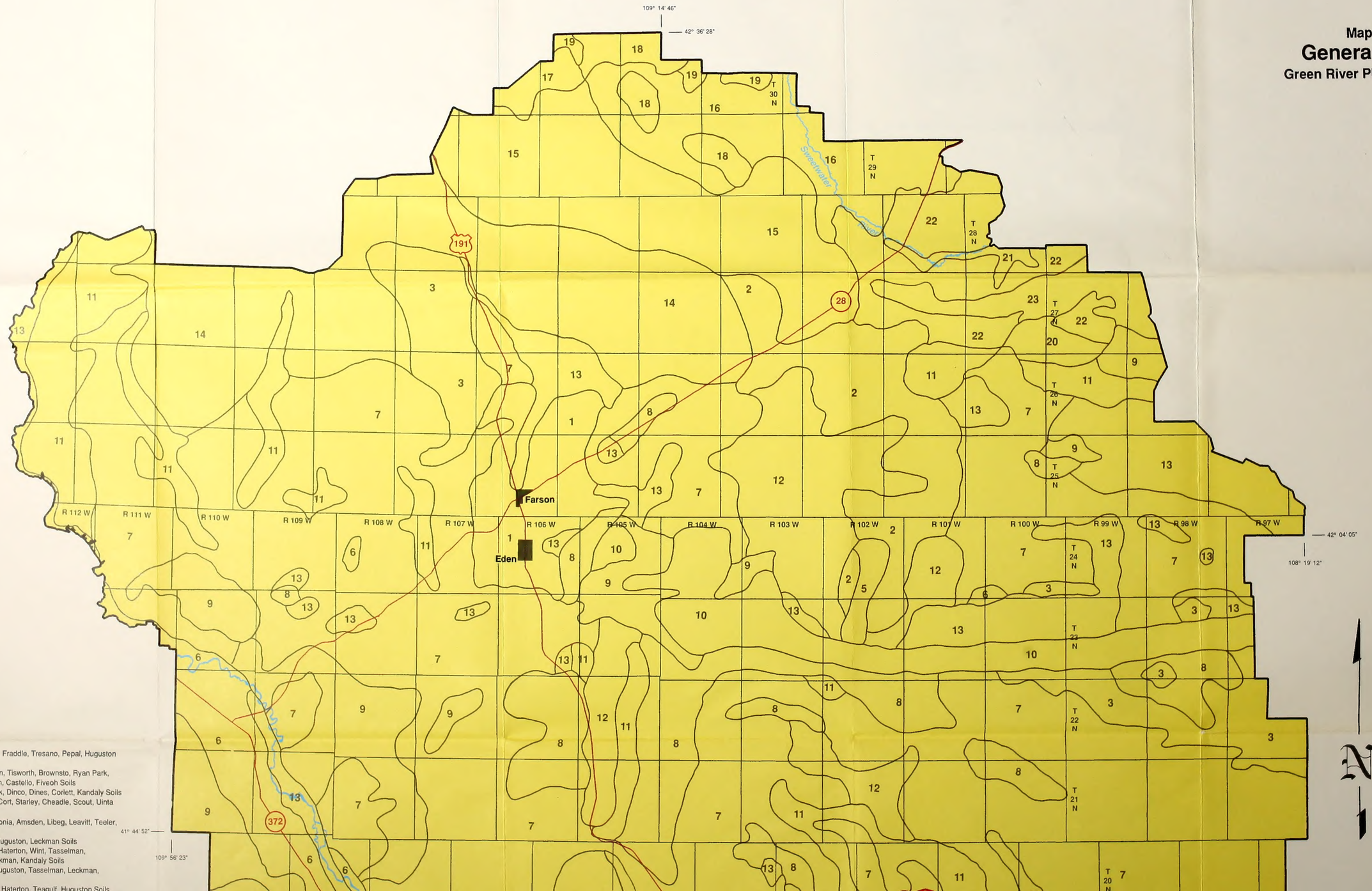
1:250,000

N

Map D

General Soils

Green River Planning Area



1 Battlespring, Farson, Fraddle, Tresano, Pepal, Huguston Soils
2 Grieves, Almy, Goslin, Tisworth, Brownsto, Ryan Park, Forelle, McFadden, Castello, Fiveoh Soils
3 Chrisman, Shellcreek, Dinco, Dines, Corlett, Kandaly Soils
4 Millpot, Stunner, McCort, Starley, Cheadle, Scout, Uinta Soils
5 Roxal, Pishkun, Feltonia, Amsden, Libeg, Leavitt, Teeler, Teemat Soils
6 Cambarge, Pepal, Huguston, Leckman Soils
7 Teagulf, Huguston, Haterton, Wint, Tasselman, Seedskadee, Leckman, Kandaly Soils
8 Kandaly, Teagulf, Huguston, Tasselman, Leckman, Pepal Soils
9 Kandaly, Westvaco, Haterton, Teagulf, Huguston Soils

1 Battlespring, Farson, Fraddle, Tresano, Pepal, Huguston Soils
2 Grieves, Almy, Goslin, Tisworth, Brownsto, Ryan Park, Forelle, McFadden, Castello, Fiveoh Soils
3 Chrisman, Shellcreek, Dinco, Dines, Corlett, Kandaly Soils
4 Millpot, Stunner, McCort, Starley, Cheadle, Scout, Uinta Soils
5 Roxal, Pishkun, Feltonia, Amsden, Libeg, Leavitt, Teeler, Teemat Soils
6 Cambarge, Pepal, Huguston, Leckman Soils
7 Teagulf, Huguston, Haterton, Wint, Tasselman, Seedskadee, Leckman, Kandaly Soils
8 Kandaly, Teagulf, Huguston, Tasselman, Leckman, Pepal Soils
9 Kandaly, Westvaco, Haterton, Teagulf, Huguston Soils
10 Colopaxi Soils
11 Huguston, Wint, Haterton, Spool, LaMarsh Soils
12 Blackhall, Rentsac, Carmody, Grieves, Rencot, Thermopolis, Elk Mountain, Blazon, Delphill, Redwash, Redcreek, Shinbara Soils
13 Dines, Quealman, Chrisman Soils
14 Typic Torriorthents, Typic Natragids, Typic Torrifluvents, Typic Calciorthids Soils
15 Ustic Torriorthents, Ustic Torrifluvents, Borrolic Haplargids Soils
16 Typic Cryorthents, Argic Cryoborolls Soils
17 Argic Cryoborolls, Typic Cryaquolls, Ustic Torrifluvents, Borollic Natragids Soils
18 Typic Cryoboralfs, Argic Cryoborolls, Argic Pachic Cryoborolls Soils
19 Typic Cryoborolls, Argic Cryoborolls, Argic Pachic Cryoborolls Soils
20 Havre, Forelle, Absher Soils
21 Countryman, Tisworth, Iceslew, Absher Soils
22 Gelkie, Hoodle, Uhl Soils
23 Conpeak, Cryluha Soils
24 Canburn, Turson, Dobrow, Gas Creek, Menbar, Fox Creek, Furniss, Heinsaw, Lachapella, Henrysfork, Newfork, Outlet, Redlodge, Tepete, Venapass Soils
25 Dahlquist, Attewan, Brownsto, Bosler, Millburne, Abarca, Brusett, Evanston, Grimm, Poposhia, Redrob, Sinkson Soils
26 Haterton, Terada, Huguston, Youjay, Garsid, Kandaly, Monte, Cambarge, Langspring, Teagulf Soils
27 Hickey, Luhon, Evanston, Blazon, Brownsto, McFadden, Poposhia Soils

41° 44' 52"
109° 56' 23"

Green River
Rock Springs
Flaming Gorge Reservoir

372 80 530 191 430

T 23 N
T 22 N
T 21 N
T 20 N
T 19 N
T 18 N
T 17 N
T 16 N
T 15 N
T 14 N
T 13 N
T 12 N

R 114 W R 113 W R 112 W R 111 W R 110 W R 109 W R 108 W R 107 W R 106 W R 105 W R 104 W R 103 W R 102 W R 101 W R 100 W

108° 09' 37"
41° 29' 09"
40° 59' 43"
110° 16' 41"
40° 59' 58"
108° 34' 08"

N

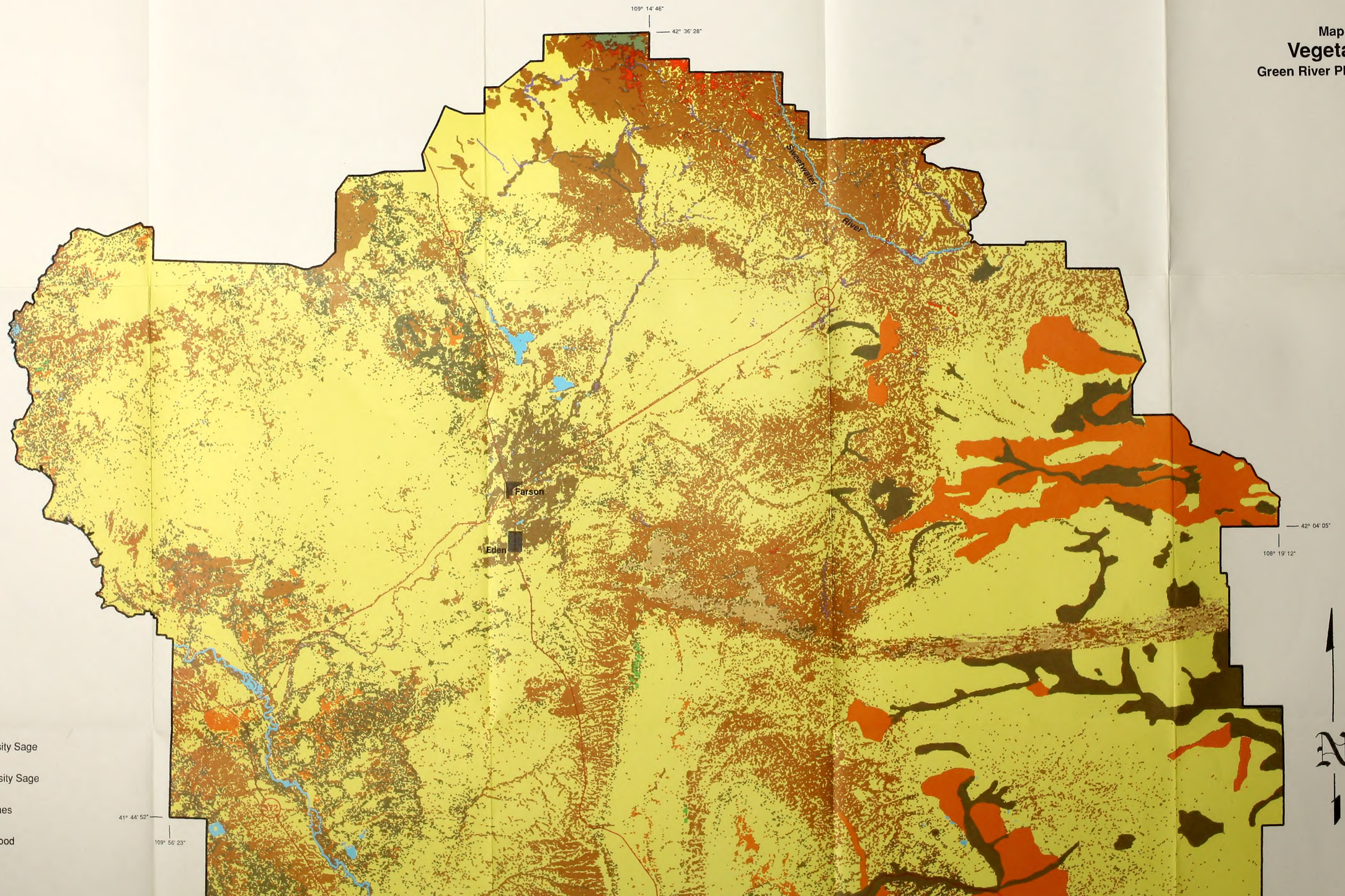
Scale in Miles
0 5 10 15 20
1:250,000

U.S. Department of Interior
Bureau of Land Management
Rock Springs, Wyoming

Map E

Vegetation

Green River Planning Area



- Low Density Sage
- High Density Sage
- Sand Dunes
- Greasewood
- Saltbush
- Agriculture
- Aspen
- Riparian
- Juniper
- Conifer
- Barren

41° 44' 52"
109° 56' 23"

Green River

Rock Springs

Green River

Flaming Gorge Reservoir

N

Scale in Miles
0 5 10 15 20
1:250,000

108° 09' 37"
41° 29' 09"

40° 59' 43"
110° 16' 41"

40° 59' 58"
108° 34' 08"

U.S. Department of Interior
Bureau of Land Management
Rock Springs, Wyoming

* U.S. GOVERNMENT PRINTING OFFICE: 1991-576-978

HD 243 .W8 R63 1996 v.1
U. S. Bureau of Land
Management. Rock Springs
Final environmental impact
statement and proposed

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225